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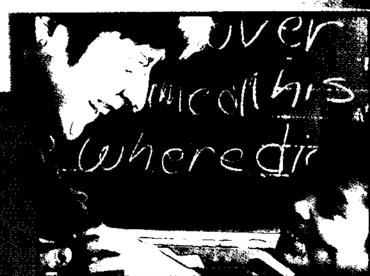
ABSTRACT

The educational indicators in this publication represent the consensus of professional thinking on how to measure the current state of education internationally. This year's edition brings the comparative review of educational systems to the end of the 1990s so that for the first time the indicators of the Organization for Economic Cooperation and Development (OECD) cover a complete decade. This edition includes new indicators on the contribution of education to changes in economic growth, trends in public and private payments for education as well as public subsidies for education and their beneficiaries, and participation in skill improvement by the employed population. It also contains indicators about the incentive structures governments use to attract and retain qualified teachers, the use of information technology in education, and trends in student achievement and inequality in literacy skills. Indicators are grouped into these chapters: (1) "Context of Education"; (2) "Financial and Human Resources Invested in Education"; (3) "Access to Education, Participation, and Progression"; (4) "The Learning Environment and Organisation of Schools"; (5) "Individual, Social and Labour Market Outcomes of Education"; and (6) "Learning Outcomes of Education." Three appendixes contain graphs and charts of typical graduation ages, basic reference statistics, and sources, methods, and technical notes. A glossary is included. (Contains 109 tables and 82 charts.) (SLD)

Education at a Glance

OECD INDICATORS

EDUCATION AND SKILLS



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2001

Centre for Educational Research and Innovation
Indicators of Education Systems

Education at a Glance

OECD INDICATORS

2001 EDITION

OECD
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

EDUCATION AT A GLANCE – OECD INDICATORS

This publication was prepared by the Statistics and Indicators Division of the OECD Directorate for Education, Employment, Labour and Social Affairs, principally by Michael Bruneforth, Eric Charbonnier, Hannah Cocks, Jean-Luc Heller, Andreas Schleicher and Claire Shewbridge. This work was facilitated by the financial and material support of the three countries responsible for co-ordinating the INES Networks – the Netherlands, Sweden and the United States. In addition, work on the publication has been aided by a grant from the National Center for Education Statistics (NCES) in the United States. *Education at a Glance* is published on the responsibility of the Secretary-General of the OECD. The data underlying the OECD education indicators are accessible *via* the Internet [*www.oecd.org/els/education/ei/index.htm*].

The development of indicators for non-OECD countries was made possible through the OECD/UNESCO World Education Indicators programme that is funded by the World Bank and facilitated by the support from many OECD countries.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

– To achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy.
– To contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
– To contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

The original Member countries of the OECD are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The following countries became Members subsequently through accession at the dates indicated hereafter: Japan (28th April 1964), Finland (28th January 1969), Australia (7th June 1971), New Zealand (29th May 1973), Mexico (18th May 1994), the Czech Republic (21st December 1995), Hungary (7th May 1996), Poland (22nd November 1996) and Korea (12th December 1996). The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention).

The Centre for Educational Research and Innovation was created in June 1968 by the Council of the Organisation for Economic Co-operation and Development and all Member countries of the OECD are participants.

The main objectives of the Centre are as follows:

– *Analyse and develop research, innovation and key indicators in current and emerging education and learning issues, and their links to other sectors of policy.*
– *Explore forward-looking coherent approaches to education and learning in the context of national and international cultural, social and economic change; and*
– *Facilitate practical co-operation among Member countries and, where relevant, with non-member countries, in order to seek solutions and exchange views of educational problems of common interest.*

The Centre functions within the Organisation for Economic Co-operation and Development in accordance with the decisions of the Council of the Organisation, under the authority of the Secretary-General. It is supervised by a Governing Board composed of one national expert in its field of competence from each of the countries participating in its programme of work.

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INTRODUCTION

THE OECD EDUCATION INDICATORS

Compelling incentives for individuals, economies and societies to raise the level of education have been the driving force behind increased participation in a widening range of learning activities by people of all ages, from earliest childhood to advanced adulthood. The challenge, in this era of spreading and diversifying demand for learning over the lifetime, is how best to meet rising demand while ensuring that the nature and types of learning respond to needs in a cost effective manner.

The 1990s have witnessed growing demand for learning throughout OECD countries...

In searching for effective education policies that enhance individuals' social and economic prospects, provide incentives for greater efficiency in schooling and help to mobilise resources in order to meet rising demands for education, governments are paying increasing attention to international comparative policy analysis. Through co-operation both within the OECD framework and in other international bodies, countries are seeking to learn from each other about how to secure the benefits of education for all, how to foster competencies for the knowledge society, and how to manage teaching and learning in order to promote learning throughout life. These were also the main themes at a meeting of OECD Education Ministers in Paris on 2-4 April 2001 (see also *www.oecd.org/els*).

... and governments are increasingly looking to learn from each other about how to manage and promote lifelong learning.

This attention has resulted in a major effort by the OECD to strengthen the collection and reporting of comparative statistics and indicators in the field of education. Over the past 13 years, the OECD has developed and published a broad range of comparative indicators that provide insights into the functioning of education systems. These reflect both the resources invested in education and their returns to individuals and societies.

The OECD education indicators provide an opportunity for countries to see their education system in the light of other countries' performances...

The OECD *education indicators* provide information on many important features of the operation, evolution and impact of education, from early childhood through formal education to learning and training throughout life. They provide an opportunity for each country to see its education system in the light of other countries' performances. Through international comparisons, countries may be able to recognise strengths and weaknesses in their own systems and to assess to what extent variations in educational experiences are unique or mirror differences observed elsewhere. Together with OECD's country policy reviews and analyses, the indicators are designed to support efforts which governments are making towards policy reform.

The OECD education indicators are the product of an ongoing process of conceptual development and data collection, the objective of which is to link a broad range of policy needs with the best available international data. Each year, Member countries and the OECD Secretariat collaborate closely in order to ensure that:

... by linking a broad range of policy needs with the best available international data.

- The presentation of the indicators is as straightforward as possible but as multifaceted as necessary to avoid oversimplification of complex educational realities.

- The indicators are as comparable as possible but as country-specific as is necessary to allow for historical, systemic and cultural differences between countries.
- The indicator set is as small as possible but as large as necessary for it to be useful for policy formation.

THE 2001 EDITION OF EDUCATION AT A GLANCE

The OECD indicators represent the consensus of professional thinking on how to measure the current state of education internationally.

The 2001 edition of *Education at a Glance* – OECD *Indicators* provides a rich, comparable and up-to-date array of indicators. The indicators represent the consensus of professional thinking on how to measure the current state of education internationally. They provide information on the human and financial resources invested in education, on how education and learning systems operate and evolve, and on the returns to educational investments. The thematic organisation of the volume, and the background information accompanying the tables and charts, make this publication a valuable resource for anyone interested in analysing education systems across countries.

This year's edition brings the comparative review of education systems to the end of the 1990s so that, for the first time, the OECD education indicators now cover a complete decade; facilitating examination of trends in the provision and outcomes of education during the 1990s.

New indicators in this year's edition provide information on...

The 2001 edition of *Education at a Glance* includes new indicators on: the contribution of education to changes in economic growth; trends in public and private payments for education as well as public subsidies for education and their beneficiaries; participation in skill improvement among the employed population; the incentive structures governments offer to attract and retain qualified teachers; the use of ICT in education; trends in student achievement; and inequality in literacy skills among the adult population.

A growing number of OECD countries are now providing data for many of the indicators. In addition, through the *World Education Indicators* programme (WEI), which the OECD co-ordinates in co-operation with UNESCO, 18 non-OECD countries have contributed to this edition, extending the coverage of some of the indicators to more than two-thirds of the world population. These non-OECD countries are Argentina, Brazil, Chile, China, Egypt, India, Indonesia, Jordan, Malaysia, Paraguay, Peru, the Philippines, the Russian Federation, Sri Lanka, Thailand, Tunisia, Uruguay and Zimbabwe. Data for these countries are reported on the basis of OECD definitions and methods to ensure comparability with the OECD indicators. Data for Israel are presented together with those from WEI participants.

... the contribution of education to changes in economic growth...

- *Chapter* A presents indicators on the context in which education systems operate. It focuses on the demographic background to educational provision and on the existing stock of human capital. Chapter A also seeks to estimate the effect of changes in explanatory variables, including human capital, on changes in output per capita growth rates over the period 1980 to 1990.

- *Chapter* B deals with the financial and human resources that countries invest in education, comparing spending on education relative to number of students, national income, and the size of the public purse; the ways in which education systems are funded and the sources from which the funds originate; and how the funds are spent.

... trends in public and private funding of education, and public subsidies for education and their beneficiaries...

- *Chapter* C presents indicators on access to education, participation, progression and completion. Trends in enrolment and completion at the various levels of education and in the different types of educational institution are shown in order to indicate how educational supply and demand have evolved in different countries.

... participation in skill improvement among the employed population...

- *Chapter* D deals with the learning environment and the various ways in which school systems are organised. It includes data on the compensation of teachers; the demography of the teaching force; training requirements for new teachers; the numbers of hours for which teachers are required to teach and students are required to be in the classroom; subject emphases in the curriculum; decision-making about the curriculum; and the availability and use of computers in schools.

... the incentives which governments offer to attract and retain qualified teachers, and the use of ICT in education...

- *Chapter* E presents a broad picture of individual, social and labour-market outcomes of education. It deals with labour force participation by level of educational attainment; education and work among the youth population; and earnings and educational attainment.

- Finally, *Chapter* F presents indicators on trends in the level of student performance in mathematics and science and the distribution of adult literacy skills.

... and trends in student achievement and adult literacy skills.

Education at a Glance is designed to provide a comprehensive statistical description of the state of education internationally. It therefore covers a broad range of educational domains and the data presented are accompanied by detailed explanations that can give readers guidance on how to draw valid conclusions from the indicators and to interpret differences between countries. In order to keep the publication manageable, the number of indicators has been limited to 31, the choice of indicators being guided by four principles:

The 31 indicators in this year's edition aim to provide a good balance...

- *Education at a Glance* seeks to provide an appropriate balance between an *encyclopædic* function (showing how things are and where countries stand) and a *yearbook* function (showing how things are changing). Trends are highlighted, in particular, in indicators A1 (changes in student demography), A2 (changes in educational attainment), A3 (the contribution of education to changes in economic growth), B1, B2, B3 and B4 (changes in public and private expenditure on education in relation to the number of students enrolled, GDP and total public expenditure), C1 and C3 (changes in expected years of schooling), and F1, F2 and F4 (changes in mathematics and science achievement).

... between showing where countries stand and how things are changing...

- Successive editions seek to maintain sufficient room for *innovation* in the indicators in order to reflect emerging policy issues. Almost one third of the data tables have been newly introduced this year (or are recurrent indicators that are not produced annually): A3 (contribution of human capital to changes in economic growth), B6 (expenditure per student on

... addressing new policy needs and providing stability in the indicator set...

teaching, ancillary services and research and development), C4 (science graduates in the labour force), D6 and D7 (information technology in education), F1, F2 and F4 (trends in mathematics and science achievement) and F3 (inequality in literacy skills in relation to income inequality). About another third of the indicators were present in the preceding edition but have been improved by the introduction of new methods. This applies to the financial indicators B1, B2, B3, B4 and B5, and to indicators C5 (students with special needs), C6 (participation in continuing education and training), D1 (teachers' salaries), and D2 (age and gender distribution of teachers). The remaining indicators are unchanged in both content and presentation from the preceding edition.

... reflecting on inputs and outcomes of education...

- Almost half of the indicators relate, directly or indirectly, to the output and outcomes of education systems, reflecting a progressive shift in public and governmental concern away from control over the resources and content of education towards results. These are indicators A2 (educational attainment), A3 (the contribution of human capital to economic growth), C2 and C4 (output of educational institutions), E1, E2, E3, E4 and E5 (employment, earnings and education), and F1, F2, F3 and F4 (student achievement and adult literacy).

... and reviewing aggregate country performance and examining issues of equity in the provision and outcomes of education.

- Finally, about one third of the indicators look at variation within countries, focusing on issues of equity in the provision and outcomes of education. These are indicators A2 (gender differences in educational attainment), C5 (special educational needs), C6 (continuing education and training), E1, E2, E3 and E4 (employment, earnings and education among different age groups and the genders), F3 (inequality in literacy skills and income), F2 (variation within countries in student achievement) and F4 (gender differences in student achievement).

The companion volume *Education Policy Analysis* takes up selected themes of key importance for governments. The latest edition of that publication, which was prepared as background for the meeting of OECD Ministers of Education in April 2001, examines promising directions for lifelong learning policies; performance by various countries in achieving lifelong learning; differences in participation in lifelong learning; skills required in the knowledge economy; and alternate futures for schools.

The data underlying the OECD education indicators are accessible *via* the Internet (*www.oecd.org/els/education/ei/index.htm*).

FUTURE PERSPECTIVES

For policy-makers in many OECD countries, international comparisons of learning outcomes have become a particularly important tool for assessing the performance of their countries' education systems and the adequacy of their students' preparation for participation in life and work in the 21st century.

In response to growing demand for international comparisons of educational outcomes, the OECD has launched the Programme for International Student Assessment (PISA). PISA represents a new commitment by the governments of OECD countries to monitoring the outcomes of education systems in terms of student achievement regularly within an internationally agreed framework. PISA aims at providing a new basis for policy dialogue and for collaboration in defining and operationalising educational goals in innovative ways that reflect judgements about the skills that are relevant to adult life. It provides inputs for standard-setting and evaluation; insights into the factors which contribute to the development of competencies, and into similarities and differences between countries in the way in which these factors operate; and a better understanding of the causes and consequences of observed skill gaps. By supporting a shift in focus from the inputs into education systems and institutions to the outcomes of learning, PISA seeks to assist policy-makers to bring about improvements in schooling and in the preparation of young people for adult life at a time of rapid change and increasing global interdependence.

Results from the PISA 2000 assessment of 15-year-olds in reading, mathematical and scientific literacy will become available in December 2001 and will fill one of the most important remaining information gaps in the OECD education indicators (see also *www.pisa.oecd.org*). PISA results will be incorporated in *Education at a Glance* from the 2002 edition onwards.

HIGHLIGHTS

☐ THE OUTCOMES OF LEARNING

At the 8th-grade level, countries generally witnessed an improvement in science performance between 1995 and 1999.

- In ten out of 13 countries, 8th-grade mean science performance improved between 1995 and 1999, although only in two countries significantly. In 1995, science students in Hungary performed around the OECD country mean, while in 1999 Hungary joined Japan and Korea in the group of countries performing significantly above the country mean. Canada, previously significantly below the OECD country mean, moved to a level comparable to the mean science achievement level in 1999. (**Indicator F1**).
- On the other hand, the Czech Republic moved from significantly above the country mean for science achievement in 1995 to a level comparable to the mean in 1999. Italy, New Zealand and the United States remained significantly below the country mean. (**Indicator F1**).

Canada and Korea show that improvement in overall performance can be achieved without widening the gap between the highest and lowest-scoring students...

- Korea has been able to improve an already high level of mean achievement in mathematics at the 8th-grade level while, at the same time, reducing the gap between the highest and lowest performers to an average level. Similarly Canada, which exhibited significant improvement both in mathematics and science, witnessed a decrease in disparities in science and only a slight increase in mathematics. (**Indicator F2**).

... but that is not yet the reality everywhere.

- However, improvements in overall performance were accompanied in other countries by an increase in the gap between the highest and lowest performers. For example, Hungary showed a significant increase in student achievement in science, yet at the same time witnessed the largest increase in disparities between 1995 and 1999. (**Indicator F2**).
- Finally, the Czech Republic and New Zealand showed decreases in mean mathematics achievement between 1995 and 1999 while variation in achievement increased, although in New Zealand at a level that was not statistically significant. (**Indicator F2**).

In Hungary, variation increased because the best-performing students became better while Korea managed to move the weakest performers closer to the mean.

- In Hungary, the improvement in the performance of the highest-scoring students accounts for the increase in the variation in mathematics scores. In New Zealand, variation increased because the lowest-scoring students performed at a lower level in 1999 than in 1995. Conversely, in Korea, variation in mathematics achievement decreased because the performance of low-achieving students improved. (**Indicator F2**).

Large gender differences are often an impediment to high average achievement.

- Gender differences in mathematics achievement in the 8th-grade are small to moderate in most of the countries. In science, gender differences are larger and more often statistically significant than in mathematics, boys scoring on average the equivalent of half a school year higher than girls. (**Indicator F4**).

- Girls in Korea score lower than boys in mathematics, but they still outperform boys and girls in all other countries. (**Indicator F4**).
- Low average performance and large gender differences are often found together: four out of the five countries which display the largest gender differences perform well below the OECD country mean. (**Indicator F4**).
- Japan, Korea and the Netherlands managed to eliminate statistically significant gender differences in mathematics scores between 1995 and 1999. (Indicator F4, 1995 and 1999).

Six out of the eight highest-scoring countries show that high levels of adult literacy can go hand in hand with narrow ranges of performance.

- Denmark, Finland, Germany, the Netherlands, Norway and Sweden, six of the eight highest-scoring OECD countries in the International Adult Literacy Survey, also show very low levels of disparities in their prose literacy scores (see Table F3.1). Canada, on the other hand, shows high mean prose scores and comparatively wide variation. The United States shows a mean score, around the country mean, combined with the highest ratio of the highest 10 per cent of prose literacy scores to the lowest 10 per cent. (**Indicator F3**).

THE RETURNS TO INVESTMENT IN LEARNING

More education brings large rewards for individuals, in terms of employment prospects...

- Labour force participation rates rise with educational attainment in most OECD countries. With very few exceptions, labour force participation among graduates of higher education is markedly higher than among upper secondary graduates. Among 20 to 29-year-olds without upper secondary education, the ratio of unemployed non-students to the total youth population is on average 1.5 times as high as among upper secondary graduates. (**Indicator E1**).

... particularly for women.

- The gender gap in labour force participation decreases with increasing educational attainment. Although a gender gap in labour force participation remains among those with the highest educational attainment, the gap is much narrower than among those with lower qualifications. (**Indicator E1**).

Upper secondary education is a break-point in many countries, beyond which additional education attracts a particularly high earnings premium.

- In all countries, graduates of tertiary-level education tend to earn substantially more than upper secondary graduates. Among those countries which report gross earnings, the earnings premium for 25 to 64-year-old men with tertiary qualifications ranges from less than 35 per cent in Canada, Denmark, Germany, Ireland, Korea, Norway and Switzerland, to 75 per cent or more in the Czech Republic, Hungary, Portugal and the United States. (**Indicator E5**).
- The differentials for tertiary education are generally more pronounced than those between upper secondary education and below, suggesting that upper secondary education forms a break-point in many countries, beyond which additional education attracts a particularly high premium. (**Indicator E5**).

Women still earn less than men with similar levels of educational attainment.

- Although both men and women with upper secondary, post-secondary non-tertiary or tertiary attainment have substantial earnings advantages compared with those of the same gender who do not complete upper secondary education, earnings differentials between men and women with the same educational attainment remain substantial, reinforced by the frequency of part-time work among women. (**Indicator E5**).

More education also pays off in terms of higher economic growth.

- Better-educated populations are a common factor behind economic growth in all OECD countries, especially in Greece, Ireland, Italy and Spain, where increases in educational attainment are estimated to have accounted for more than half a percentage point of the annual average growth rate in the 1990s compared with the previous decade. (**Indicator A3**).

☐ ACCESS TO EDUCATION AND STUDY PATTERNS

In response to rising demand, education systems are rapidly expanding to allow more people to study for longer.

- In 25 out of 27 OECD countries, individuals participate in formal education for between 15 and 20 years, on average, with most of the variation coming from differences in enrolment at upper secondary level. School expectancy increased between 1995 and 1999 in 18 out of 20 OECD countries. In Finland, Greece, Hungary, Korea, Poland, Turkey and the United Kingdom, the increase exceeded one year over this relatively short period. (**Indicator C1**).
- In two-thirds of the countries, the ratio of upper secondary graduates to the population at typical age of graduation exceeds 80 per cent. In Denmark, Germany, Hungary, Japan, Korea, the Netherlands and the Slovak Republic, it is 90 per cent or more. But in most countries, ensuring that the remaining fraction is not left behind poses a significant challenge because of the attendant risk of social exclusion. (**Indicator C2**).
- A comparison of the attainment of the population aged 25 to 34 years with that of the age group 55 to 64 shows that the proportion of individuals who have not completed upper secondary education has been shrinking in all OECD countries. In Korea and Spain, the proportion of individuals aged 25 to 34 with at least upper secondary attainment is more than three times as high as in the age group 55 to 64. (**Indicator A2**).
- Many countries currently showing low attainment in the adult population are expected to move closer to those with higher attainment levels. (**Indicator A2**).

Participation is expanding in a widening range of learning activities among people of all ages, from earliest childhood to advanced adulthood...

- Enrolment rates for three to four-year-olds range from less than 20 per cent in Canada, Korea, and Switzerland to over 90 per cent in Belgium, France, Iceland, Italy and Spain. (**Indicator C1**).
- At the other end of the spectrum, an OECD average of four out of ten school leavers are likely to attend tertiary programmes which lead to the equivalent of a Bachelor's or higher tertiary-type A degree during the course of their lives. In Finland, Hungary, Iceland, the Netherlands, New Zealand, Norway, Poland and Sweden, more than one in two school leaver enters a tertiary-type A degree programme. (**Indicator C3**).
- With the exception of Canada, France and Germany, enrolment in tertiary education grew in all countries between 1995 and 1999, by more than 15 per cent in the majority of countries, and in Hungary, Korea and Poland by between 40 and 84 per cent. On average across OECD countries, a 17-year-old can now expect to receive 2.5 years of tertiary education, of which 2 years will be full-time. (**Indicator C3**).

- Comparing the number of science graduates with the number of 25 to 34-year-olds in the labour force provides one way of gauging recent output of high-level science skills by different education systems. The number of science graduates per 100 000 people in the labour force ranges from below 700 in the Czech Republic, Mexico and the Netherlands to above 1 600 in Finland, France, Ireland, Japan and the United Kingdom. (**Indicator C4**).
- In all but one country, at least one in five employees have participated in job-related continuing education and training within a 12-month period. However, the incidence and intensity of participation varies greatly between countries. Participation by employees in job-related continuing education and training ranges from 24 per cent or below in Belgium (Flemish Community), Hungary, Ireland and Poland to over 50 per cent in Denmark, Finland, Norway and the United Kingdom. (**Indicator C6**).

... but education combines with other influences to make adult education and training least common among those who need it most.

- Continuing education and training tend to reinforce skill differences resulting from unequal participation in initial education. Participation rates in both job-related continuing education and training and in all continuing education and training rise with levels of educational attainment. Adults aged 25 to 64 years who have not attained upper secondary education participate, on average, in only 17 hours of job-related continuing education and training over the course of a year. As compared to that, the comparable figure is 40 hours for adults with an upper secondary and /or post-secondary non-tertiary qualification and over 64 hours for those with a tertiary qualification. (**Indicator C6**).
- Among adults with lower levels of educational attainment, women tend to receive less job-related continuing education and training, but the pattern is less pronounced at higher levels of education. (**Indicator C6**).
- Unemployed people take even less advantage of continuing education and training but, when they do, programmes tend to be longer, often as a consequence of active labour market policies. (**Indicator C6**).

In the majority of OECD countries, women can expect to receive more years of formal education than men...

- The balance of educational attainment among men and women in the adult population is unequal in most OECD countries. Historically, women did not have sufficient opportunities and/ or incentives to reach the same level of education as men. Women are generally over-represented among those who did not proceed to upper secondary education and underrepresented at the higher levels of education. However, these differences are mostly attributable to the large differences among older age groups and have been significantly reduced or reversed among younger age groups. (**Indicator A2**).
- In the majority of OECD countries, women can currently expect to receive more years of education than men – an additional 0.4 years, on average. (**Indicator C1**).
- In 17 out of 21 OECD countries graduation rates at the upper secondary level for women exceed those for men, by 10 percentage points or more in the Czech Republic, Denmark, Finland, Greece, Ireland, Italy and Spain. (**Indicator C2**).

... but men remain more likely to attain advanced research degrees in most OECD countries.

- On average across OECD countries, 53 per cent of all first tertiary-type A graduates are women. In Iceland, New Zealand, Norway and Sweden, the proportion of women exceeds 60 per cent but is 45 per cent or below in Germany, Japan, Switzerland and Turkey. Men remain more likely than women to attain advanced research degrees in all OECD countries. (**Indicator C4**).

In some countries, governments have begun to leave the management of education institutions to the private sector...

- New funding strategies aim not only at mobilising the required resources from a wider range of public and private sources, but also at providing a broader range of learning opportunities and improving the efficiency of schooling. In the majority of OECD countries, publicly funded primary and secondary education is also organised and delivered by public institutions, but in some countries the public funds are either transferred to private institutions or given directly to households to spend on the institution of their choice. (**Indicator B3**).

... but most privately managed schools are still publicly funded.

- On average across OECD countries, 11 per cent of primary and secondary students combined are enrolled in privately managed educational institutions that are predominantly publicly funded. In fact, in Belgium and the Netherlands, the majority of primary and secondary students are enrolled in government-dependent private institutions (58 and 76 per cent, respectively), and in Australia, Korea, Spain and the United Kingdom the proportion is more than 20 per cent (in the case of the United Kingdom largely due to enrolment in private further education colleges). Although these institutions are privately managed, the financial support from government can have attendant conditions. For example, teachers may be required to meet some minimum level of qualification, or students may be required to pass a government-regulated examination in order to graduate.
- Only in Japan, Mexico, Portugal and the United States are around 10 per cent of students enrolled in private institutions that are predominantly funded through unsubsidised household payments. (**Indicator C1**).

In more than half of OECD countries, the majority of upper secondary students attend vocational or apprenticeship programmes.

- In more than half of OECD countries, the majority of upper secondary students attend vocational or apprenticeship programmes. In countries with so-called "dual-systems" (such as Austria, Germany, Luxembourg, the Netherlands and Switzerland), as well as in Belgium, the Czech Republic, Italy, Poland, the Slovak Republic and the United Kingdom, 60 per cent or more of upper secondary students are enrolled in vocational programmes. (**Indicator C2**).
- In most countries vocational education is school-based, although in Austria, Iceland and the Slovak Republic about half of vocational programmes have combined school-based and work-based elements, and in Denmark, Germany, Hungary and Switzerland the majority of vocational programmes have both school-based and work-based elements. (**Indicator C2**).
- In three out of four countries, the majority of upper secondary students are enrolled in general and vocational programmes that are primarily designed to prepare them for a wide range of tertiary education including theory-oriented studies at the tertiary level (ISCED 5A programmes). (**Indicator C2**).

☐ THE TRANSITION FROM EDUCATION TO WORK

The transition from education to work remains difficult...

- Young people are experiencing difficulties in gaining a firm foothold in the world of work. The transition, even for successful graduates, tends to take place later than it used to, and it is often protracted. A representative 15-year-old in an OECD country can today expect to hold a job for

6.5 years, to be unemployed for one year and to be out of the labour force for 1.5 year in the 15 years up to and including the age of 29. (**Indicator E2**).

... but young school leavers can expect to spend less time in unemployment than ten years ago.

- The cumulative average duration of unemployment is below six months in Denmark, Luxembourg, Mexico, Switzerland and the United States, but amounts to more than eighteen months in the Czech Republic, Greece, Italy, Poland and Spain. (**Indicator E2**).

A high incidence of working while in education and a relatively low incidence of unemployment among non-students are often found together.

- Before the age of 19, the situation of young people in employment varies widely between countries. In more than half of countries, a large majority (between 60 and over 80 per cent) of those in employment are still in education, combining study with some form of employment. (**Indicator E4**).
- The proportion of young women who study and have a job is everywhere higher than that of men, the average difference being more than 5 percentage points. For those young women who combine work and education, employment tends to be part-time in more than 60 per cent of cases in almost every country. (**Indicator E4**).

☐ INVESTMENT IN EDUCATION

All OECD countries invest a substantial proportion of national resources in education...

- Taking into account both public and private sources of funds, OECD countries spend 5.7 per cent of their collective GDP on their educational institutions. The highest-spending countries are Denmark, Iceland, Korea, Norway and Sweden, which spend around 7 per cent of GDP on educational institutions. One third of OECD countries, however, spend less than 5 per cent of GDP on educational institutions, and in the Czech Republic, the Netherlands and Turkey this figure is only between 3.5 and 4.7 per cent. (**Indicator B2**).
- On average, OECD countries devote almost 13 per cent of total government expenditure to educational institutions. Iceland, Korea, Mexico and Norway allocate between 16 and 22 per cent of total public spending to education but in the Czech Republic, Germany and Greece, this figure is less than 10 per cent. As in the case of educational spending relative to GDP, these values need to be interpreted in the light of several factors, most notably student demography and enrolment rates. (**Indicator B4**).

... but spending per secondary student varies between countries by a factor of 6.5.

- As a whole, OECD countries spend US$ 3 915 per primary student, US$ 5 625 per secondary student and US$ 11 720 per tertiary student. This amounts to 19 per cent of GDP per capita per primary student, 25 per cent per secondary student and 44 per cent per tertiary student. But there are wide differences between countries. At the primary level, expenditure ranges from US$ 863 in Mexico to US$ 6 713 in Denmark. Differences between countries are even greater at the secondary level, where spending per student varies by a factor of 6.5, from US$ 1 438 in Poland to US$ 9 348 in Switzerland. Expenditure per tertiary student ranges from US$ 3 800 in Mexico to US$ 19 802 in the United States. The labour-intensiveness of the traditional model of education accounts for the predominance of teachers' salaries in overall costs. Differences in the ratio of students to teaching staff. (Indicator D5), in staffing patterns. (Indicator D2), in teachers' salaries. (Indicator D1) and in facilities. (Indicator B6) all influence the differences in cost between levels of education and types of programme. (**Indicator B1**).

- Comparatively moderate annual expenditure per student can translate into high overall costs of education if the average duration of studies is long. For example, annual spending per tertiary student in the Netherlands is about the same as in Austria (around US$ 11 000). But because of differences in the tertiary degree structure and length of studies (indicator C4), the cumulative expenditure for each tertiary student is more than 50 per cent higher in Austria than in the Netherlands (US$ 72 000 compared with US$ 42 000). (**Indicator B1**).

However, lower spending per student cannot automatically be equated with lower quality of educational outcomes.

- However, lower spending per student cannot automatically be equated with lower quality of educational outcomes. Japan, Korea and the Netherlands, for example, which show comparatively moderate expenditure per student, are among the countries with the highest levels of mathematics achievement among 8th-grade students. (**Indicators B1 and F1**).

In 11 out of 18 OECD countries, investment in education increased between 1995 and 1998 by more than 5 per cent.

- In 11 out of 18 OECD countries, public and private investment in educational institutions increased by over 5 per cent between 1995 and 1998 in real terms. Increases in expenditure amounted to over 15 per cent in Denmark, Ireland and Portugal, and to over 60 per cent in Turkey. (**Indicator B2**).
- Direct public expenditure on institutions and public subsidies to households rose by over 5 per cent in 16 out of 22 countries over the same period. (**Indicator B2**).
- Italy, which saw significant decreases in public expenditure on educational institutions in the early 1990s, experienced growth in public spending on educational institutions of more than 11 per cent between 1995 and 1998. On the other hand, expenditure on educational institutions remained unchanged in Austria, Canada, Germany, Hungary and Mexico between 1995 and 1998, and fell in the Czech Republic. (**Indicator B2**).

Typically, public expenditure on education grew faster than total government spending...

- The process of budget consolidation puts pressure on education as on every other public service. Nevertheless, with the exception of Canada, the Czech Republic and Norway, spending on education grew faster than public spending in other areas, the proportion of public budgets spent on education growing, on average, from 11.9 per cent in 1995 to 12.9 per cent in 1998. In Denmark, the proportion of public spending devoted to education increased from 13.1 per cent in 1995 to 14.8 per cent in 1998, in Italy from 8.7 to 10.0 per cent and in the Netherlands, from 9.1 to 10.6 per cent. (**Indicator B4**).

... but increases in spending on education tended to fall behind the growth in national income.

- While spending on educational institutions tended to increase, both in absolute terms and in relation to total public expenditure, it should not be overlooked that, with the exception of Denmark, Greece, Italy, Portugal, New Zealand and Turkey, these increases lagged behind growth in GDP over the same period. (**Indicator B2**).

While schools, universities and other educational institutions are still mainly publicly funded, there is a substantial degree of private funding...

- With increased participation drawing from new client groups, and a wider range of educational opportunities, programmes and providers, governments are forging new partnerships to mobilise the necessary resources to pay for education. While schools, universities and other educational institutions are still mainly publicly funded, there is a substantial and growing degree of private funding. At the primary and secondary levels of education, an average of 9 per cent of funding now comes from private sources and in Australia, Germany, Korea and Turkey, this figure is more than 15 per cent. (**Indicator B3**).

... most notably at the tertiary level of education.

- While primary and secondary education are usually perceived as a public good and are therefore publicly funded, at the tertiary level the high private returns in the form of better employment and income opportunities suggest that a greater contribution by individuals to the costs of tertiary education would be justified. Hence, the proportion of private funds tends to be much higher at the tertiary level: ranging from 2 per cent or less in Austria and Switzerland to over one third in Australia, Canada, Japan, Korea, the United Kingdom and the United States. In Japan, more than half of all final funds for tertiary institutions originate from private sources, and in Korea the figure exceeds 80 per cent. (**Indicator B3**).

In many countries, the private proportion of educational funding has been rising...

- Direct private expenditure on educational institutions increased by over 5 per cent in absolute terms between 1995 and 1998 in nine out of 16 OECD countries. (**Indicators B2 and B3**).

- Despite a significant concurrent increase in public funding, in Turkey the proportion of private funds in total spending on all levels of education grew from 5.3 per cent in 1995 to 16 per cent in 1998. (**Indicator B3**).

... but changes are most striking in tertiary education, where a dramatic growth in participation is in response to heavy demand...

- As demand for tertiary education has increased in many countries, so has the share of the financial burden borne by the families and other private entities. Eight out of 17 OECD countries reported an increase in private spending on tertiary education institutions of more than 20 per cent between 1995 and 1998. (**Indicator B2**).

- Some countries, notably Hungary and Italy, saw a clear shift in the relative proportions of public and private investment in tertiary education institutions between 1995 and 1998. In Italy, the private-sector proportion increased from 17 to 25 per cent and in Hungary, from as little as 2 per cent in 1995 to 23 per cent in 1998. (**Indicator B3**).

- However, there are exceptions to this pattern. In Austria, the Czech Republic and Mexico, private funding of tertiary education decreased by around half between 1995 and 1998. As a consequence, the proportion of private funding of educational institutions relative to total spending decreased from almost 30 per cent in 1995 to less than 15 per cent in the Czech Republic, and from 23 to 12 per cent in Mexico. (**Indicator B3**).

... although this has not led in most countries to a decrease in public spending on tertiary education.

- Public investment in education has increased in all but three countries for which 1995 to 1998 data are available, regardless of changes in private spending. In fact, some of the countries with the highest growth in private spending have also seen the highest increase in public spending on education. This finding, which can also be observed when one considers the longer period 1980-1998, indicates that increasing private spending on tertiary education tends to complement, rather than replace, public investment. (**Indicator B3**).

- In Ireland, an increase of 21 per cent in private-sector funding of tertiary institutions between 1995 and 1998 was outpaced by an increase in public funding of over 40 per cent, resulting in a decline in the private share. (**Indicators B2 and B3**).

Private funding of tertiary education does not exclude high levels of participation...

- New funding strategies aim not only at mobilising the required resources from a wider range of public and private sources, but also at influencing student behaviour in ways that make education more cost-effective. It is hard to determine the precise impact of tuition fees on learners' behaviour, partly because fees cannot be seen in isolation from grants, taxation and implicit subsidies through loans as well as the expected earnings premia from investment in tertiary qualifications. But many countries in which students and their families spend more on tertiary education show some of the highest tertiary participation and completion rates. (**Indicators B3 and C3**).

... and some of the countries with largely publicly funded tertiary education show some of the lowest entry rates.

- Conversely, in the six countries with the lowest entry rates to tertiary type-A education – the Czech Republic, Denmark, France, Germany, Mexico and Switzerland – private sources of funds account only for between 1 and 15 per cent of total spending on tertiary institutions. It is therefore not clear that participation by the beneficiaries of tertiary studies in the funding of their education creates economic barriers, provided that governments develop appropriate strategies to make funding accessible to students from all income groups. (**Indicators B3, B5 and C3**).

OECD countries spend an average of 0.4 per cent of their GDP on public subsidies to households and other private entities.

- Countries use different mixtures of grants and loans to subsidise students' educational costs. Fourteen out of 26 OECD countries, for which the data are available, rely exclusively on grants or scholarships. The remaining countries provide both grants or scholarships and loans to students. (**Indicator B5**).
- Canada, New Zealand and the United Kingdom spend a third or more of their public education budget at the tertiary level on subsidies to the private sector. (**Indicator B5**).
- In most countries, the beneficiaries of subsidies have considerable discretion in how they spend those subsidies. (**Indicator B5**).

Staff salaries account for most of educational spending.

- The salaries of teachers and other staff employed in education account for the largest proportion of current expenditure in OECD countries. On average across OECD countries, expenditure on the compensation of educational personnel accounts for 80 per cent of current expenditure at the primary, secondary and post-secondary non-tertiary levels of education combined. (**Indicator B6**).
- In Denmark and the United States, around one third of staff expenditure in primary, secondary and post-secondary non-tertiary education combined goes towards compensation of non-teaching staff, while in Ireland and Turkey this figure is 5 per cent or less of current expenditure. These differences reflect the degree to which educational personnel are engaged in non-teaching activities in a particular country, as well as the relative salaries of teaching and non-teaching personnel. (**Indicator B6**).

On average, one quarter of expenditure on tertiary education is attributable to R&D activities performed by tertiary education institutions.

- In Sweden, R&D in tertiary education institutions accounts for 47 per cent of overall spending on tertiary education institutions, which in turn amounts to 0.8 per cent of GDP. In Germany, the Netherlands and the United Kingdom, R&D accounts for one third or more of spending on tertiary education institutions. (**Indicator B6**).

☐ THE LEARNING ENVIRONMENT AND THE ORGANISATION OF SCHOOLS

Statutory salaries for lower secondary teachers with 15 years' experience in Germany, Korea and Switzerland are more than four times those in the Czech Republic, Hungary and Turkey.

- In OECD countries, annual statutory salaries of public lower secondary classroom teachers with 15 years' experience range from below US$ 10 000 in the Czech Republic, Hungary and Turkey to over US$ 50 000 in Switzerland. These differences, which appear even after an adjustment for purchasing power parities has been made, have a large impact on the variation in education costs per student. (**Indicator D1**).
- With increasing levels of education, statutory mid-career salaries tend to increase, from an average of US$ 27 500 at the primary level through US$ 28 600 at the lower secondary level to US$ 31 900 at the upper secondary level. At the same time, the extent to which countries pay classroom teachers more at higher levels of education varies greatly. While in England, Norway, New Zealand, Portugal and Scotland, statutory salaries after 15 years of experience do not significantly differ between the primary and secondary level, in the Netherlands and Switzerland upper secondary salaries are 1.5 and 1.4 times as high as at the primary level. (**Indicator D1**).

Many countries reward teachers with additional bonuses...

- Most countries provide permanent bonuses to classroom teachers for higher-than-minimum educational qualifications, for additional management responsibilities and for teaching students with special educational needs. Temporary adjustments are awarded to teachers who work overtime or who are involved in special tasks and activities. (**Indicator D1**).

... which may also be given for outstanding performance.

- Several countries award permanent or temporary salary enhancements to teachers for outstanding performance in teaching. (**Indicator D1**).

In most countries, other public sector professions tend to be better off than primary teachers.

- In general, primary classroom teachers' salaries tend to be significantly lower than those in other public professions at skill levels 1 to 3 of the International Standard Classification of Occupations. The discrepancy is particularly large in Australia, Canada, Denmark, France, Iceland and Italy. In 13 countries, the salary of a primary school teacher is at least 10 per cent lower than that of a civil engineer, qualified executive official, sanitary engineer, mathematics teacher, head-teacher or public health physician. (**Indicator D1**).
- But there are exceptions. In Greece, Mexico and Portugal, the salary of a primary school teacher is at least 10 per cent higher than that in other public sector professions. (**Indicator D1**).

In most countries, mid-career salaries for teachers relative to GDP per capita were lower in 1999 than in 1994.

- In order to measure the extent to which a country invests in teaching resources, relative to its ability to fund educational expenditure, it is useful to compare statutory salaries relative to GDP per capita. High salaries relative to GDP per capita suggest that a country is making more of an effort to invest its financial resources in teachers. Mid-career salaries of primary and lower secondary classroom teachers relative to GDP per capita were lower in 1999 than in 1994 in all OECD countries except Greece and New Zealand. At the lower secondary level, the OECD average for mid-career salaries relative to GDP per capita was 1.36 in 1999, compared with 1.50 in 1994. (**Indicator D1**).

Length of teaching experience influences teachers' salary scales in many countries.

- Comparing gross teachers' salaries between countries at the point of entry into the teaching profession, after 15 years' experience and at the top of the salary scale provides information on the extent to which teaching experience influences salary scales within countries. Classroom teachers in Hungary and Portugal, for example, have starting salaries that are below the OECD average but increase by over 43 per cent after 15 years' experience. In countries such as Australia, Denmark, England, New Zealand and Scotland, where it takes only between seven and 11 years for upper secondary teachers to reach the top salary, there is little or no difference between salaries after 15 years of service and top-of-the-scale salaries. (**Indicator D1**).

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

- In most OECD countries, the majority of primary and secondary students are taught by teachers aged 40 years or over. In Canada, Germany, Italy, the Netherlands and Sweden, 60 per cent or more of primary teachers are over 40 years of age. In some countries, these teachers will be reaching retirement age at about the time when student enrolments are expected to increase. On the other hand, Belgium (Flemish Community) and Korea have a comparatively young teaching force in primary education; more than 50 per cent of their primary teachers are younger than 40 years of age. (**Indicators A1 and D2**).
- In 16 out of 18 countries, secondary teachers tend to be older than primary teachers. (**Indicator D2**).

... and the teaching force continues to age.

- The average proportion of teachers in primary education aged 50 years or over increased by 4 per cent between 1996 and 1999. In Germany, the Netherlands and the United Kingdom, this proportion rose by more than 5 per cent. (**Indicator D2**).

Teaching is still predominantly a female profession...

- Women tend to be in the majority in the teaching profession at the pre-primary, primary and lower secondary levels of education. (**Indicator D2**).

... except at the higher, and usually better paid, levels of education.

- In general, women are less well represented at the higher, and usually better paid, levels of education. At the upper secondary level, 49 per cent of teachers are women, on average, but this ranges from 40 per cent or less in Denmark, Germany, Korea, the Netherlands and Switzerland to between 59 and 67 per cent in Canada, Hungary, Italy and the Slovak Republic. (**Indicators D1 and D2**).
- At the tertiary-type A and advanced research programmes level, male teachers are in the majority in all countries except in the Czech Republic. At this level, the proportion of female teachers ranges from less than one quarter in the Flemish Community of Belgium, Korea and Switzerland to over 40 per cent in Australia, the Czech Republic, Finland and Iceland. (**Indicator D2**).

There is wide variation in intended hours of instruction.

- Across OECD countries, reading and writing in the mother tongue, mathematics and science account for 39 per cent of total intended instruction time. (**Indicator D4**).
- Intended instruction time in mathematics and science over three years ranges from 467 hours in Iceland to 1 167 hours in Mexico. (**Indicator D4**).
- In Australia, Belgium (Flemish Community), Hungary, the Netherlands and Scotland, 20 per cent or more of total intended instruction time is allocated to non-compulsory subjects. (**Indicator D4**).

The percentage of primary students using computers ranges from 25 per cent in Italy to around 90 per cent or more in Canada, Finland and New Zealand.

- The average number of students per computer is a proxy for the extent to which new technologies are accessible to students. Although the availability of hardware does not guarantee its effective use, an inadequate number of computers can seriously affect the dissemination and development of information and communication technology (ICT) within schools. At the primary level, the percentage of students using computers ranged, in 1999, from 25 per cent in Italy to around 90 per cent or more in Canada, Finland and New Zealand. (**Indicator D7**).
- The number of primary school students (including those who do not use computers) per computer ranged from 158 in Italy to 11 in Canada. (**Indicator D7**).

At the primary level, over 75 per cent of schools in Canada, Finland, Iceland and New Zealand are connected to the Internet.

- In 1999, over 75 per cent of primary schools were connected to the Internet in Canada, Finland, Iceland and New Zealand. With the exception of Italy, where 28 per cent of primary schools were connected, in all other countries participating in the survey more than half of primary schools were connected to the Internet. (**Indicator D7**).
- However, many countries have ambitious plans for the schools not currently connected to the Internet. Italy, for example, has the lowest connection rate, 28 per cent, but aims to connect 71 per cent of primary schools to the Internet by 2001. (**Indicator D7**).

On average, seven out of ten primary and lower secondary school principals have set the goal of training all teachers in ICT...

- At least 70 per cent of school principals intend to train all their teachers in ICT, except in secondary education in Japan. In Finland, New Zealand and Norway, this figure is close to 95 per cent. (**Indicator D6**).

... but few countries have achieved this goal.

- However, there are significant differences between countries in the realisation of these training objectives. Only in Finland and New Zealand do at least 30 per cent of school principals claim that all primary teachers have received ICT training. (**Indicator D6**).

Informal communication is the most common means by which primary school teachers acquire ICT knowledge.

- Principals of primary schools report that teachers acquire ICT knowledge largely through informal contacts and communications. Training by the school's IT specialist is reported to be the second most common means of transfer of knowledge, followed by in-school and then external courses. (**Indicator D6**).

Summary of main indicators in *Education at a Glance* 2001

	Total expenditure for educational institutions as a percentage of GDP	Index of change in public expenditure for educational institutions (1995 = 100)	Index of change in private expenditure for educational institutions (1995 = 100)	Percentage of expenditure on educational institutions from private sources of funds after transfers from public sources	Public subsidies as a percentage of all public expenditure on tertiary education	Annual expenditure per student in equivalent US dollars (converted using PPPs)			Index of change in annual expenditure per student (1995 = 100)	
						Primary education	Secondary education	All tertiary education	Primary and secondary education	Tertiary education
OECD countries										
Australia	5.5	109	131	25	28	3 981	5 830	11 539	112	95
Austria	6.4	103	101	6	12	6 065	8 163	11 279	m	89
Belgium	5.0	m	m	m	23	3 743	5 970	6 508	m	m
Belgium (Fl.)	4.7	103	m	m	25	3 799	6 238	6 597	100	m
Belgium (Fr.)	m	m	m	m	m	m	m	m	m	m
Canada	6.2	97	105	19	41	m	m	14 579	101	94
Czech Republic	4.7	90	75	13	7	1 645	3 182	5 584	89	67
Denmark	7.2	115	136	5	31	6 713	7 200	9 562	112	88
Finland	5.7	107	m	m	18	4 641	5 111	7 327	101	93
France	6.2	105	100	8	8	3 752	6 605	7 226	105	106
Germany	5.5	101	98	22	12	3 531	6 209	9 481	98	106
Greece	4.8	132	m	m	3	2 368	3 287	4 157	m	m
Hungary	5.0	101	112	12	13	2 028	2 140	5 073	96	72
Iceland	6.9	m	m	m	22	m	m	m	m	m
Ireland	4.7	116	115	10	15	2 745	3 934	8 522	114	119
Italy	5.0	111	m	5	19	5 653	6 458	6 295	112	110
Japan	4.7	m	m	25	m	5 075	5 890	9 871	m	m
Korea	7.0	m	m	43	4	2 838	3 544	6 356	m	m
Luxembourg	m	m	m	m	m	m	m	m	m	m
Mexico	4.7	105	79	14	8	863	1 586	3 800	m	m
Netherlands	4.6	109	107	7	26	3 795	5 304	10 757	m	m
New Zealand	m	129	m	m	42	m	m	m	m	m
Norway	6.9	108	94	2	29	5 761	7 343	10 918	104	96
Poland	m	116	m	m	5	1 496	1 438	4 262	123	112
Portugal	5.7	118	268	1	6	3 121	4 636	m	m	m
Slovak republic	m	m	m	m	m	m	m	m	m	m
Spain	5.3	108	101	17	11	3 267	4 274	5 038	118	111
Sweden	6.8	m	m	3	30	5 579	5 648	13 224	m	m
Switzerland	5.9	m	m	9	2	6 470	9 348	16 563	m	m
Turkey	3.5	148	505	16	3	m	m	m	m	m
United Kingdom	4.9	106	106	9	35	3 329	5 230	9 699	98	89
United States	6.4	m	m	25	20	6 043	7 764	19 802	m	m
Country mean	**5.7**	**111**	**140**	**13.4**	**17.8**	**3 940**	**5 294**	**9 063**	**106**	**97**
WEI participants										
Argentina	4.8	m	m	16.5	1.0	1 389	1 860	2 965	m	m
Brazil	m	m	m	m	6.2	837	1 076	14 618	m	m
Chile	6.2	m	m	44.5	24.2	1 500	1 713	5 897	m	m
China	m	m	m	m	m	m	m	m	m	m
Egypt	m	m	m	m	m	m	m	m	m	m
India	m	m	m	m	m	m	m	m	m	m
Indonesia	2.0	m	m	30.3	m	116	497	6 840	m	m
Israel	m	m	m	20.0	9.9	4 135	5 115	10 765	m	m
Jordan	m	m	m	m	m	m	m	m	m	m
Malaysia	m	m	m	m	16.6	919	1 469	m	m	m
Paraguay	m	m	m	m	1.3	572	948	m	m	m
Peru	5.0	m	m	42.5	n	479	671	2 085	m	m
Philippines	6.2	m	m	43.7	3.4	689	726	2 799	m	m
Russian Federation	m	m	m	m	m	m	m	m	m	m
Sri Lanka	m	m	m	m	m	m	m	m	m	m
Thailand	7.6	m	m	44.0	25.8	1 048	1 177	6 360	m	m
Tunisia	m	m	m	m	m	891	1 633	5 136	m	m
Uruguay	m	m	m	6.2	m	971	1 246	2 081	m	m
Zimbabwe	m	m	m	m	12.7	768	1 179	10 670	m	m

m = missing data.
1. United Kingdom: data are given for England. Results for Scotland are available separately.

Tables	**B2.1*a***	**B2.2**	**B2.2**	**B3.1**	**B5.2**	**B1.1**	**B1.1**	**B1.1**	**Ch. B1.3**	**Ch. B1.1**
Years	**1998**	**1998**	**1998**	**1998**	**1998**	**1998**	**1998**	**1998**	**1998**	**1998**
Pages	80	83	83	93	108	67	67	67	60	56

Participation in education

Annual statutory teachers' salaries in public lower secondary education after 15 years of experience[1]: Teacher salary in equivalent US dollars (PPPs)	Salary per teaching hour in equivalent US dollars (PPPs)	Ratio of salary to GDP per capita	Ratio of salary to GDP per capita (1994)	Ratio of students to teaching staff: Primary education	Secondary education	All tertiary education	Computers in schools and their use: Mean ratio of total number of students to computers in lower secondary schools	Percentage of lower secondary schools which have access to the Internet for instructional purposes	School expectancy (in years) under current conditions (education for children under age 5 excluded)	Net entry rates in tertiary-level education (Tertiary-type A)	Expected years of tertiary education	Index of change in tertiary enrolment (1995 = 100)
37 138	47	1.5	m	17.3	12.7	m	m	m	19.9	44.9	3.0	108
27 503	42	1.1	1.3	14.5	9.8	15.0	m	m	16.0	m	2.2	106
m	m	m	m	m	m	m	m	m	18.5	m	m	109
32 819	46	1.3	1.4	13.9	8.8	18.1	m	m	m	29.6	2.7	m
31 903	44	1.3	1.4	m	m	m	29.7	41	m	m	m	m
m	m	m	m	18.7	19.3	m	8.8	98	16.5	m	2.7	98
9 032	13	0.7	m	23.4	14.7	14.9	43.7	33	15.1	23.1	1.4	137
32 684	51	1.2	1.4	10.6	12.4	m	11.7	85	17.7	34.0	2.5	115
28 225	43	1.2	1.4	17.4	13.5	m	13.5	96	18.3	67.2	3.9	113
28 757	45	1.3	1.4	19.6	12.8	16.9	m	m	16.5	35.5	2.6	98
38 596	53	1.6	1.8	21.0	15.2	12.3	m	m	17.2	28.5	2.0	97
23 943	38	1.6	1.3	13.5	10.6	26.0	m	m	15.6	m	2.5	131
8 252	15	0.7	m	10.9	10.6	12.1	35.6	41	16.0	58.0	1.8	164
21 891	34	0.8	m	13.3	m	8.0	18.8	100	17.7	55.4	2.0	m
35 944	49	1.4	2.2	21.6	14.6	17.3	m	m	16.0	m	2.4	118
25 397	41	1.1	1.2	11.3	10.3	24.8	30.1	73	15.8	40.0	2.2	105
m	m	m	m	21.2	15.4	11.5	21.4	58	m	37.2	m	m
39 265	77	2.5	m	32.2	22.2	m	m	m	15.8	43.0	3.5	140
m	m	m	m	12.5	9.9	m	15.6	79	m	m	m	m
15 592	19	1.8	m	27.2	32.2	14.8	m	m	12.4	23.9	0.9	120
33 056	38	1.3	1.5	16.6	17.7	12.0	19.5	m	17.1	54.1	2.3	m
32 573	35	1.8	1.3	20.5	16.1	14.8	10.3	89	17.2	70.8	3.0	m
25 854	41	0.9	1.0	12.6	m	13.4	13.8	81	17.9	57.1	3.1	103
m	m	m	m	m	m	m	m	m	16.0	59.0	2.3	184
27 465	41	1.6	2.4	m	m	m	m	m	16.8	m	2.3	119
m	m	m	m	19.6	13.6	10.3	m	m	m	34.9	m	m
31 178	56	1.7	1.9	15.4	12.9	16.4	m	m	17.3	45.7	2.8	117
24 487	m	1.1	1.1	13.3	14.5	9.5	m	m	20.3	64.8	2.9	m
52 247	61	1.9	2.0	16.1	12.3	m	m	m	16.3	29.1	1.7	m
9 355	16	1.2	1.4	30.0	16.1	21.5	m	m	10.6	m	1.2	125
33 540	m	1.5	m	22.5	14.7	18.5	m	m	18.9	45.3	2.6	115
33 418	35	1.0	1.2	16.3	15.6	14.0	m	m	17.2	44.9	3.6	m
28 629	**41**	**1.4**	**1.5**	**18.0**	**14.6**	**15.3**	**20.2**	**76**	**16.7**	**44.6**	**2.5**	**120.1**
22 266	3	1.9	m	20.7	14.3	m	m	m	14.2	50.8	m	m
11 180	14	1.7	m	28.9	36.2	13.3	m	m	14.9	m	m	m
15 868	19	1.8	m	33.4	29.1	m	m	m	14.3	m	m	m
m	m	m	m	m	m	m	m	m	10.1	m	m	m
m	m	m	m	23.4	16.9	m	m	m	11.0	m	m	m
m	m	m	m	m	m	m	m	m	m	m	m	m
2 938	2	1.1	m	23.1	18.7	12.5	m	m	9.7	11.1	m	m
m	m	m	m	17.4	11.3	m	m	m	15.4	m	2.7	m
10 652	14	2.9	m	m	10.1	m	m	m	11.6	m	m	m
21 568	28	2.7	m	21.6	19.3	m	m	m	12.5	12.8	m	m
m	m	m	m	19.7	9.9	m	m	m	11.0	m	m	m
4 701	8	1.0	m	23.5	17.2	13.9	m	m	13.2	m	m	m
13 715	12	3.8	m	34.4	32.9	17.2	m	m	11.8	30.7	m	m
m	m	m	m	m	m	m	m	m	12.2	m	m	m
m	m	m	m	m	m	m	m	m	m	m	m	m
14 208	22	2.5	m	20.7	22.7	28.5	m	m	18.1	m	1.7	m
16 467	36	2.9	m	23.9	23.8	26.5	m	m	13.4	m	m	m
11 675	21	1.4	m	20.6	15.1	7.4	m	m	15.2	m	m	m
m	m	m	m	41.0	27.3	32.3	m	m	9.9	m	m	m
D1.1b	**D1.1b**	**D1.1b**	**D1.1b**	**D5.1**	**D5.1**	**D5.1**	**D7.1**	**D7.3**	**C1.1**	**C3.1**	**C3.2**	**C3.4**
1999	**1999**	**1999**	**1994**	**1999**	**1999**	**1999**	**1998-1999**	**1998-1999**	**1999**	**1999**	**1999**	**1999**
204	204	204	204	243	243	243	260	262	133	155	156	158

Continuing education and training: Percentage of 25-64 year-olds participating	Continuing education and training: Expected hours of training outside formal education over the lifecycle	Learning environment and organisation of schools: Number of teaching hours per year for teachers in public lower secondary education[1]	Learning environment and organisation of schools: Total intended instruction time in hours per year for students 13 years of age[1]	Learning environment and organisation of schools: Percentage of teachers in lower secondary shools over 50 years of age	Individual and labour market outcomes of education — Educational attainment of the adult population and current graduation rates: Upper secondary attainment or higher (25-64 year-olds)	Current upper secondary graduation rate	Tertiary attainment (25-64 year-olds)	First-time tertiary graduation rates (Tertiary-type A)	Number of science graduates per 100 000 persons in the labour force 25 to 34 years of age	Index of differentials, tertiary-type A to upper secondary (25-64 year-olds): Men	Index of differentials, tertiary-type A to upper secondary (25-64 year-olds): Women	Ratio of unemployment rates, tertiary-type A to upper secondary (25-64 year-olds): Men	Ratio of unemployment rates, tertiary-type A to upper secondary (25-64 year-olds): Women	Trends in mean achievement scores in the 8th grade, by subject[1]: Mathematics achievement (mean scale score)	Trends in mean achievement scores in the 8th grade, by subject[1]: Mathematics achievement (mean scale score)	Distribution of prose literacy skills for the population aged 16 to 65 years of age: Mean score	Distribution of prose literacy skills for the population aged 16 to 65 years of age: Percentage of the population scoring at level 3 or higher	
																		OECD countries
27	1 221	955	1 013	m	57.4	m	26.7	27.0	m	144	154	0.6	0.5	519	525	274	55	Australia
m	m	658	1 156	16.8	73.9	m	10.9	12.0	m	m	m	0.6	0.6	539	m	m	m	Austria
m	m	m	m	m	57.4	m	25.9	m	m	m	m	0.4	0.5	m	m	m	m	Belgium
20	1 020	720	960	m	m	83.3	m	17.8	m	m	m	m	m	550	558	272	60	Belgium (Fl.)
m	m	733	1 048	m	m	m	m	m	m	m	m	m	m	526	m	m	m	Belgium (Fr.)
30	m	m	m	25.1	79.5	m	39.2	29.3	1 240	148	164	0.6	0.6	521	531	279	57	Canada
25	1 118	709	827	32.6	86.0	51.6	10.8	10.8	671	178	172	0.4	0.4	546	520	269	58	Czech Republic
51	3 224	644	900	m	79.6	89.9	26.5	m	m	148	144	0.9	1.3	502	m	275	68	Denmark
54	3 876	656	855	32.6	71.5	89.0	31.3	33.9	1 785	186	176	0.3	0.4	m	m	289	63	Finland
m	m	634	979	32.6	61.9	85.0	21.5	24.9	2 063	178	158	0.7	0.6	538	m	m	m	France
m	m	733	921	45.7	81.2	91.9	22.9	16.0	835	149	160	0.5	0.5	509	m	276	58	Germany
m	m	629	1 036	m	49.9	67.0	17.8	m	m	m	m	0.7	0.6	484	m	m	m	Greece
17	1 206	555	902	m	67.4	91.9	13.5	26.9	775	218	159	0.2	0.2	527	532	242	33	Hungary
m	m	636	817	m	56.0	81.6	22.4	28.9	750	m	m	0.5	0.5	487	m	m	m	Iceland
18	1 219	735	935	28.6	51.3	86.4	21.1	26.0	2 789	m	m	0.7	0.8	527	m	266	43	Ireland
19	861	612	1 105	44.6	42.2	73.5	9.3	16.0	m	m	m	0.9	0.8	m	m	m	m	Italy
m	m	m	875	m	80.9	94.9	31.6	29.0	1 614	m	m	0.5	0.7	581	579	m	m	Japan
m	m	507	867	13.5	66.3	91.2	22.7	27.1	m	143	160	0.7	0.6	581	587	m	m	Korea
m	m	m	m	32.7	55.9	60.0	18.3	m	m	m	m	1.0	0.8	m	m	m	m	Luxembourg
m	m	832	1 167	m	20.2	31.2	13.2	11.2	606	m	m	3.1	1.3	m	m	m	m	Mexico
31	2 027	868	1 067	m	m	91.6	22.6	33.5	581	138	145	1.0	0.6	529	540	283	64	Netherlands
38	1 714	930	988	25.2	73.6	m	27.0	37.3	1 494	m	m	0.8	0.8	501	491	275	50	New Zealand
44	2 341	633	855	31.8	84.6	m	27.4	33.9	759	133	136	0.7	0.6	503	m	289	70	Norway
13	1 024	m	m	m	54.0	m	11.3	29.9	743	m	m	0.3	0.2	m	m	230	24	Poland
12	m	666	930	m	21.2	m	9.8	m	m	188	190	0.8	0.4	454	m	223	28	Portugal
m	m	m	m	29.2	m	92.6	m	19.8	m	m	m	m	m	m	m	m	m	Slovak republic
m	m	561	870	m	35.1	67.8	21.0	30.3	1 359	178	155	0.9	0.7	487	m	m	m	Spain
51	m	m	m	41.6	76.6	74.4	28.7	27.2	1 029	m	m	0.6	0.3	519	m	301	75	Sweden
38	1 733	859	741	27.3	81.7	83.4	23.6	20.6	m	144	154	0.6	1.2	545	m	264	53	Switzerland
m	m	576	864	m	22.2	m	7.1	9.6	978	m	m	0.7	0.4	m	m	m	m	Turkey
38	1 693	m	940	21.9	61.7	m	24.8	36.8	1 620	159	193	0.5	0.7	498	496	267	50	United Kingdom
38	1 680	964	m	m	86.9	78.2	35.8	33.2	1 098	183	170	0.5	0.5	492	502	274	50	United States
31	**1 730**	**715.9**	**946.8**	**30.1**	**62.0**	**78.9**	**21.5**	**24.9**	**1 199**	**163**	**162**	**0.6**	**0.6**	**528**	**529**	**269**	**53**	**Country mean**
																		WEI participants
m	m	900.0	935.9	14.1	m	40.3	m	7.5	m	m	m	m	m	m	m	m	m	Argentina
m	m	800.0	800.0	9.3	24.3	44.2	7.5	8.9	m	m	m	m	m	m	m	m	m	Brazil
14	673	859.5	990.0	30.3	42.9	56.5	9.1	16.8	m	m	m	m	m	m	m	m	m	Chile
m	m	m	m	8.5	m	37.4	m	m	m	m	m	m	m	m	m	m	m	China
m	m	m	1 026.0	m	m	m	m	m	m	m	m	m	m	m	m	m	m	Egypt
m	m	m	m	m	m	46.5	m	m	m	m	m	m	m	m	m	m	m	India
m	m	738.0	1 230.8	7.9	22.4	31.6	4.8	6.4	m	m	m	m	m	m	m	m	m	Indonesia
m	m	m	m	15.7	m	86.2	m	27.6	m	m	m	m	m	m	m	m	m	Israel
m	m	744.9	974.1	3.4	50.6	72.9	35.8	m	m	m	m	m	m	m	m	m	m	Jordan
m	m	777.8	1 189.0	8.7	35.2	62.1	8.3	7.0	m	m	m	m	m	m	m	m	m	Malaysia
m	m	774.3	911.9	m	m	30.6	m	m	m	m	m	m	m	m	m	m	m	Paraguay
m	m	648.0	903.0	m	46.0	57.0	15.9	7.6	m	m	m	m	m	m	m	m	m	Peru
m	m	1 176.0	1 466.7	18.6	43.5	57.4	11.4	20.0	m	m	m	m	m	m	m	m	m	Philippines
m	m	m	m	m	m	m	m	26.1	m	m	m	m	m	m	m	m	m	Russian Federation
m	m	1 260.0	m	m	35.6	m	1.8	1.9	m	m	m	m	m	m	m	m	m	Sri Lanka
m	m	651.6	1 166.7	m	16.1	64.9	9.7	13.1	m	m	m	m	m	m	m	m	m	Thailand
m	m	548.0	900.0	4.7	8.3	33.7	4.9	7.3	m	m	m	m	m	m	m	m	m	Tunisia
m	m	712.0	1 295.0	m	31.8	m	9.4	6.3	m	m	m	m	m	m	m	m	m	Uruguay
m	m	936.0	1 288.8	m	28.6	m	10.8	m	m	m	m	m	m	m	m	m	m	Zimbabwe
C1.5	**C1.5**	**D3.1**	**D4.1a**	**D2.1**	**A2.2a**	**C2.2**	**A2.2b**	**C4.1**	**C4.4**	**E5.1**	**E5.1**	**E1.2**	**E1.2**	**F1.1**	**F1.1**	**F3.1**	**EAG 2000**	**Tables**
1994-1998	**1994-1998**	**1999**	**1999**	**1999**	**1999**	**1999**	**1999**	**1999**	**1999**	**1999**	**1999**	**1999**	**1999**	**1995**	**1999**	**1994-1998**	**1994-1998**	**Years**
137	137	226	234	216	45	146	46	169	172	303	303	274	274	312	312	324		Pages

READER'S GUIDE

COVERAGE OF THE STATISTICS

Although a lack of data still limits the scope of the indicators in many countries, the coverage extends, in principle, to the entire national education system regardless of the ownership or sponsorship of the institutions concerned and regardless of education delivery mechanisms. With one exception described below, all types of students and all age groups are meant to be included: children (including those classified as exceptional), adults, nationals, foreigners, as well as students in open distance learning, in special education programmes or in educational programmes organised by ministries other than the Ministry of Education, provided the main aim of the programme is the educational development of the individual. However, vocational and technical training in the workplace, with the exception of combined school and work-based programmes that are explicitly deemed to be parts of the education system, is not included in the basic education expenditure and enrolment data.

Educational activities classified as "adult" or "non-regular" are covered, provided that the activities involve studies or have a subject-matter content similar to "regular" education studies or that the underlying programmes lead to potential qualifications similar to corresponding regular educational programmes. Courses for adults that are primarily for general interest, personal enrichment, leisure or recreation are excluded.

CALCULATION OF INTERNATIONAL MEANS

For many indicators a country mean is presented and for some an OECD total.

The *country mean* is calculated as the unweighted mean of the data values of all countries for which data are available or can be estimated. The country mean therefore refers to an average of data values at the level of the national systems and can be used to answer the question of how an indicator value for a given country compares with the value for a typical or average country. It does not take into account the absolute size of the education system in each country.

The OECD *total* is calculated as a weighted mean of the data values of all countries for which data are available or can be estimated. It reflects the value for a given indicator when the OECD area is considered as a whole. This approach is taken for the purpose of comparing, for example, expenditure charts for individual countries with those of the entire OECD area for which valid data are available, with this area considered as a single entity.

Note that both the country mean and the OECD total can be significantly affected by missing data. Given the relatively small number of countries, no statistical methods are used to compensate for this. In cases where a category is not applicable (code "a") in a country or where the data value is negligible (code "n") for the corresponding calculation, the value zero is imputed for the purpose of calculating country means. In cases where both the numerator and the denominator of a ratio are not applicable (code "a") for a certain country, this country is not included in the country mean.

For financial tables using 1995 data, both the country mean and OECD total are calculated for countries providing both 1995 and 1998 data. This allows comparison of the country mean and OECD total over time with no distortion due to the exclusion of certain countries in the different years.

ISCED LEVELS OF EDUCATION

The classification of the levels of education is based on the revised International Standard Classification of Education (ISCED-97). The biggest change between the revised ISCED and the former ISCED (ISCED-76) is the introduction of a multi-dimensional classification framework, allowing for the alignment of the educational content of programmes using multiple classification criteria. ISCED is an instrument for compiling statistics on education internationally and distinguishes among six levels of education. The Glossary and the notes in Annex 3 (indicator A2) describe in detail the ISCED levels of education, and Annex 1 shows corresponding theoretical graduation ages of the main educational programmes by ISCED level.

SYMBOLS FOR MISSING DATA

Four symbols are employed in the tables and graphs to denote missing data:

a Data not applicable because the category does not apply.

m Data not available.

n Magnitude is either negligible or zero.

x Data included in another category/column of the table.

COUNTRY CODES

OECD *Member countries*

Australia	AUS	Korea	KOR
Austria	AUT	Luxembourg	LUX
Belgium	BEL	Mexico	MEX
Belgium (Flemish Community)	BFL	Netherlands	NLD
Canada	CAN	New Zealand	NZL
Czech Republic	CZE	Norway	NOR
Denmark	DNK	Poland	POL
Finland	FIN	Portugal	PRT
France	FRA	Slovak Republic	SVK
Germany	DEU	Spain	ESP
Greece	GRC	Sweden	SWE
Hungary	HUN	Switzerland	CHE
Iceland	ISL	Turkey	TUR
Ireland	IRL	United Kingdom	UKM
Italy	ITA	United States	USA
Japan	JPN		

COUNTRIES PARTICIPATING IN THE 2000 OECD/UNESCO WORLD EDUCATION INDICATORS PROGRAMME (WEI PARTICIPANTS)

Argentina, Brazil, Chile, China, Egypt, India, Indonesia, Jordan, Malaysia, Paraguay, Peru, Philippines, Russian Federation, Sri Lanka, Thailand, Tunisia, Uruguay and Zimbabwe.

Data from countries participating in the 2000 OECD/UNESCO World Education Indicators (WEI) programme, referred to as "WEI participants" in this publication, are also presented in an OECD publication "*Teachers for Tomorrow's World, Analysis of the 2000 World Education Indicators*".

Israel has observer status in OECD's activities on education and has contributed to the OECD indicators on educational finance. Data for Israel are presented together with those from WEI participants.

CONTEXT OF EDUCATION

A

Education systems operate within a complex demographic, social and economic environment. In order to interpret countries' investment in education and their educational outputs and outcomes, it is important to know about the existing supply of human knowledge, competence and skills to which education systems seek to add. These factors can be set alongside the current investments in education (see Chapter B) and the output of education systems, shown especially in indicators C2 and C4.

Demographic patterns determine the size of the client-base of educational services. Other important factors shaping the demand for learning include the speed of change in the knowledge requirements of the labour market. Such changes encourage individuals, education systems and other stakeholders to extend learning beyond formal and initial education.

Families and societies invest in child-rearing and education in order to provide for their own sustained well-being and that of succeeding generations. Furthermore, individuals and families with more foresight have long known that by investing in education they can actually improve their economic situation and living standards. In today's knowledge economies, human capital is seen as a major resource for the development of a country's wealth.

Indicator A1 shows the demographic background to educational provision, in terms of the trend in the size of youth cohorts at the "expected" ages of participation in various stages of education. This indicator must be qualified with two observations. First, participation rates among age groups before and after compulsory schooling are by no means constant. Second, participation is not always at the "expected" age, and is becoming less so as lifelong learning becomes commonplace. Nevertheless, demographic data are important in forecasting costs both within compulsory education and, in combination with plans or expectations for particular patterns of participation, outside it.

Indicator A2 estimates the existing stock of human knowledge and skills, sometimes referred to as human capital. A common method of estimating educational attainment in a population is the highest level of education completed by members of the adult population. This is the most easily measurable proxy for the overall qualifications of the workforce, and is a factor which plays an important role in shaping economic outcomes and the quality of life. Since formal education systems do not change very rapidly, and are comparable on the basis of the time and human resources allocated to education, the educational attainment of national populations, expressed as the highest level of attainment of their members, is a robust indicator of the stock of human capital. It can show how attainment has been rising over time, by comparing differences between younger and older people, educated in different decades. It can also highlight gender differences in education, and changes in women's education over time.

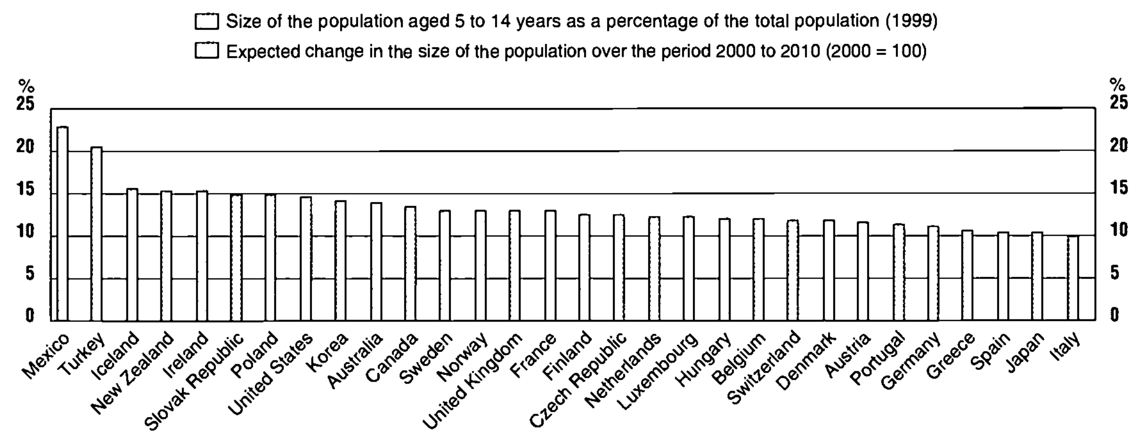
Indicator A3 looks at the human capital investment aspect of education. It is shown on the basis of growth analysis that human capital (as measured by the educational attainment of the population of working age) has a measurable influence on economic growth and on trading opportunities (trade exposure). Trade exposure can be regarded as a measure of the "favourable climate" for the population, and educational attainment as a measure of its "health and vigour". A well-educated population can combat difficulties, and can recognise and take advantage of opportunities. Even with imperfect measures it can be shown that educational attainment is one of the variables contributing to growth.

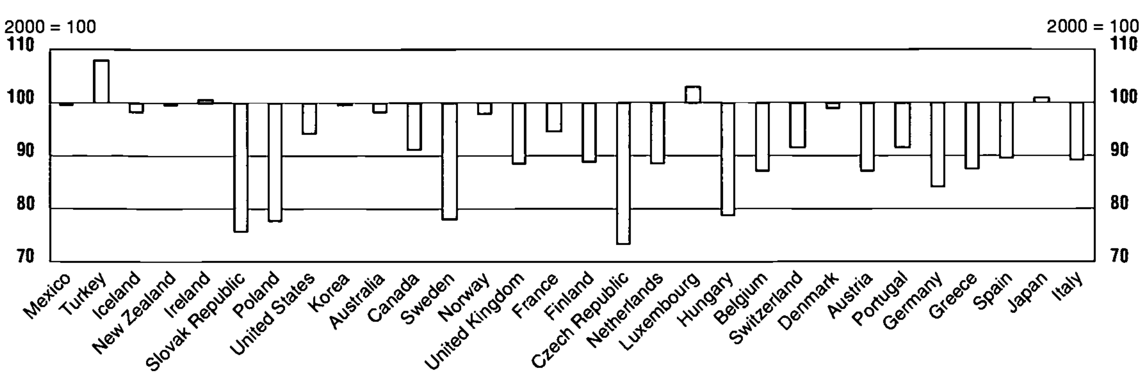
RELATIVE SIZE OF THE SCHOOL-AGE POPULATION

- The size of the school-age population in a given country shapes the potential demand for initial education and training. The higher the number of young people, the greater the potential demand for educational services. Among countries of comparable wealth, a country with a relatively large youth population would have to spend a relatively high percentage of its GDP on education in order to provide the same educational opportunities that young persons in other countries enjoy.
- The chart illustrates the proportion of the population in an age band roughly corresponding to the typical ages of students in primary/lower secondary education. In Italy, Japan and Spain, only 10 per cent of the population are between the ages of five and 14. This is in contrast to Mexico and Turkey, where these figures are 23 and 21 per cent respectively. The Czech Republic and the Slovak Republic are the only countries in which the proportion of five to 14-year-olds – currently 12 and 15 per cent respectively – is expected to decline by more than 24 per cent over the next decade. The demographic patterns have important implications for the financial and human resources which countries need to invest in education.

Chart A1.1. **Relative size and expected changes of the population at the age of primary/lower secondary education (1999)**

Size of the population aged 5 to 14 years as a percentage of the total population, and expected change in the size of this population over the next decade





Countries are ranked in descending order of the percentage of 5 to 14-year-olds in the total population.

Source: OECD. Table A1.1.

POLICY CONTEXT

This indicator shows the relative size of the school-age population in primary, secondary and tertiary education, and forecasts these populations up to the year 2010.

The number of young people in a population influences both the rate of renewal of labour-force qualifications and the amount of resources and organisational effort which a country must invest in its education system. Other things being equal, countries with larger proportions of young people in the population must allocate a larger proportion of their national income to initial education and training than those with smaller youth populations but similar participation rates. On the other hand, countries with a smaller proportion of young people in the population face the dilemma of short-term versus long-term investment: greater investment is needed to reproduce a labour force that is well-educated and capable of staying active in the labour force up to the age of 64 or longer (Chapter E).

Projections of the relative size of the school-age population help to predict changes in the number of students and in the resources needed. However, these predictions have to be interpreted with caution. At the lowest level of education, enrolment rates are close to 100 per cent (see indicator C1) and the number of students closely follows demographic changes. This is not the case in upper secondary and higher education. In almost all countries, the growth in enrolment rates in response to labour market challenges has outweighed the decrease in cohort sizes.

EVIDENCE AND EXPLANATIONS

Differences between countries in the relative size of the youth population have diminished since 1990 but there are still notable contrasts.

While the proportion of five to 14-year-olds as a percentage of the total population varies between 11 and 15 per cent in most OECD countries the proportion of 20 to 29-year-olds is in general slightly larger (Table A1.1). Although differences between countries in the relative size of the youth population have diminished since 1990, there are still notable contrasts.

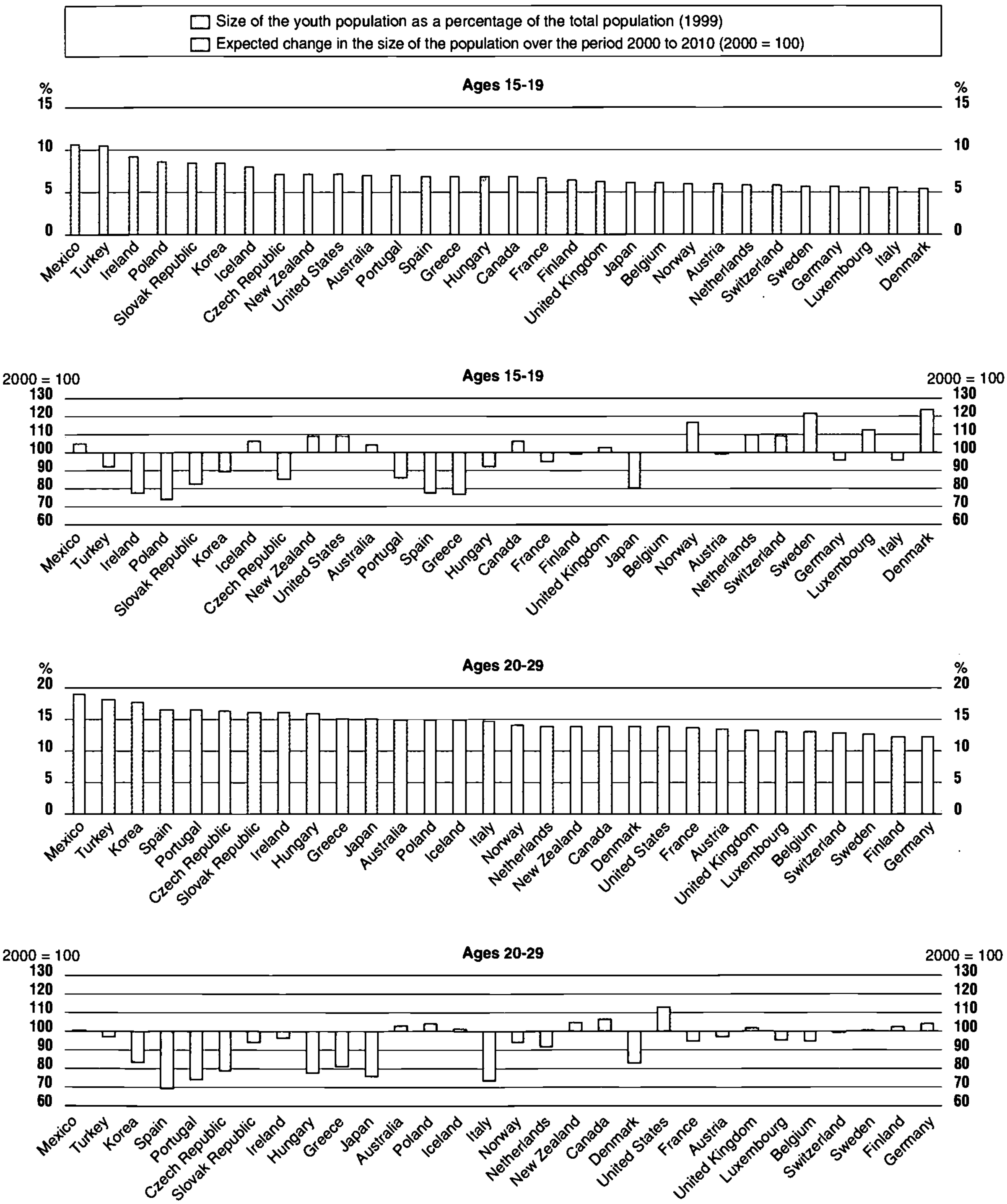
In Ireland, Korea, Mexico and Turkey, more than 40 per cent of the population are between five and 29 years old. In Italy, Japan and Spain, only 10 per cent of the population are between the ages of five and 14. This is in contrast to Mexico and Turkey, where these figures are 23 and 21 per cent respectively. Two of the least prosperous countries in the OECD thus have both fewer resources to allocate to education and more children between whom to distribute these resources.

The sharp decline in youth populations during the 1970s and 1980s has generally slowed, and population forecasts suggest that the proportion of five to 14-year-olds will stabilise in many OECD countries.

Taking the size of the population in 2000 as the baseline (index = 100), Table A1.1 illustrates how the population in three age bands (roughly corresponding to typical ages of students in primary/lower secondary, upper secondary and tertiary education) is expected to develop over the next decade. The sharp decline in the population of five to14-year-olds that occurred in many OECD countries during the 1970s and 1980s has generally slowed, and population forecasts suggest that over the next decade the proportion of five to 14-year-olds will stabilise in many OECD countries. The Czech Republic and the Slovak Republic are the only countries in which the proportion of five to 14-year-olds – currently 12 and 15 per cent respectively – will decline by 24 per cent or more over the next decade. It is worth noting that in Hungary, Poland and Sweden the decline will also exceed 20 per cent (Table A1.1).

Chart A1.2. **Relative size and expected changes within the youth population (1999)**

Size of the population aged 15 to 19 and 20 to 29 years as a percentage of the total population, and expected change in the size of this population over the next decade



Countries are ranked in descending order of the size of the population aged 15 to 19 and 20 to 29 years as a percentage of the total population.
Source: OECD. Table A1.1.

A declining youth population is no longer the rule, however. In 13 out of 30 OECD countries the number of five to 14-year-olds has been rising by between 2 and 10 per cent over the period 1995 to 2000. These rises will feed through into further rises in demand for post-compulsory education in the coming years. When populations of these ages were falling it was relatively easy to expand participation rates – but can these higher levels now be sustained? The countries where the population of five to 14-year-olds is expected to increase by 3 per cent or more between 2000 and 2010 are Luxembourg and Turkey. Whereas there is a comparatively low proportion of five to 14-year-olds in Luxembourg, in Turkey a comparatively high proportion is expected to continue to expand (Table A1.1).

More variation can be observed in older age groups: in Denmark, Luxembourg, the Netherlands, New Zealand, Norway, Sweden, Switzerland and the United States, the number of 15 to 19-year-olds is expected to increase by between 9 and 24 per cent, combined with rising access to upper secondary education in these countries (indicator C1).

Among 20 to 29-year-olds, the typical age band for tertiary education, a decline of more than 20 per cent in the Czech Republic, Hungary, Italy, Japan, Portugal and Spain will ease the pressure on tertiary spending. In Canada and the United States, by contrast, the population of 20 to 29-year-olds is expected to increase by 6 and 13 per cent respectively over the next decade, posing a challenge to tertiary education systems in these countries (Table A1.1).

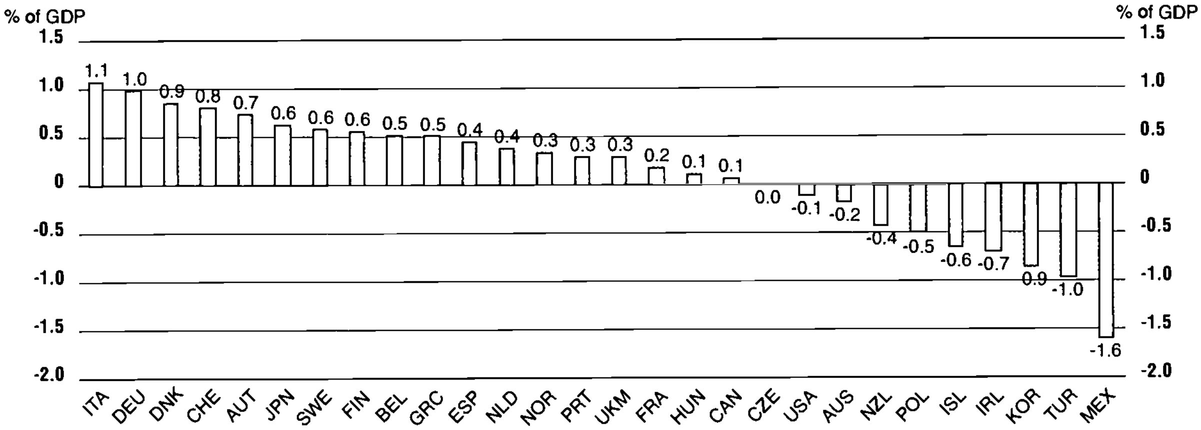
Student demography is a factor with a significant influence on the financial resources required for education.

The size of the youth population in a given country shapes the potential demand for initial education and training. The higher the number of young people, the greater the potential demand for educational services. Among countries of comparable wealth, a country with a relatively large youth population would have to spend a relatively high percentage of its GDP on education in order to provide the same educational opportunities that young persons in other countries enjoy. Conversely, if the relative size of the youth population is smaller, the same country could spend a lower percentage of its GDP on education and yet achieve similar results.

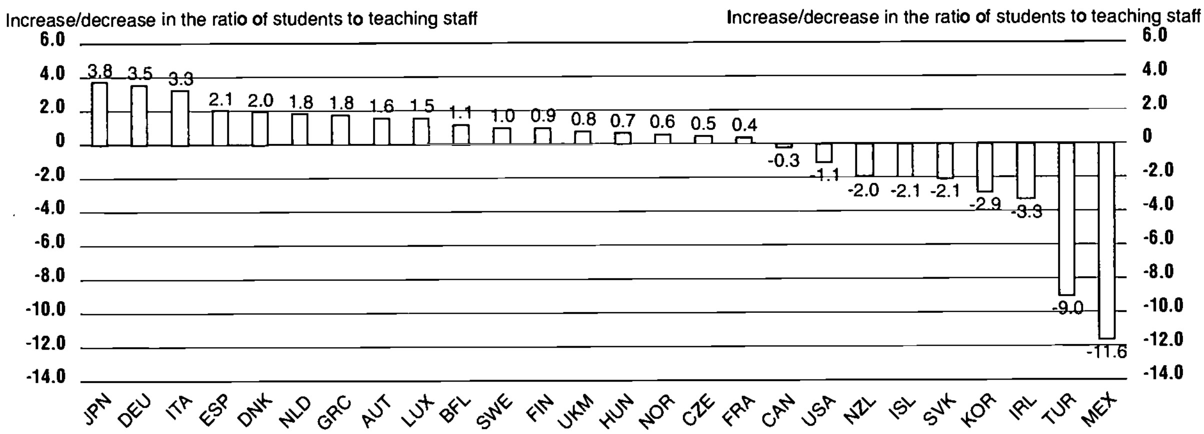
Chart A1.3*a* shows the effects on educational spending of differences between countries in the relative size of the youth population. In Italy, a country with one of the lowest proportions of five to 29-year-olds in the total population, educational expenditure as a percentage of GDP could be expected to rise by 21 per cent if the relative size of the youth population were at the level of the OECD average. In Mexico, by contrast, expenditure on education could be expected to be 33 per cent lower if the proportion of five to 29-year-olds were at the level of the OECD average. In other words, all other things being equal, Mexico would have to increase its investment in educational institutions in order to reach OECD average spending per student as a percentage of GDP (see indicator B1).

Chart A1.3. **Impact of demography on expenditure on education as a percentage of GDP, and the ratio of students to teaching staff (1999)**

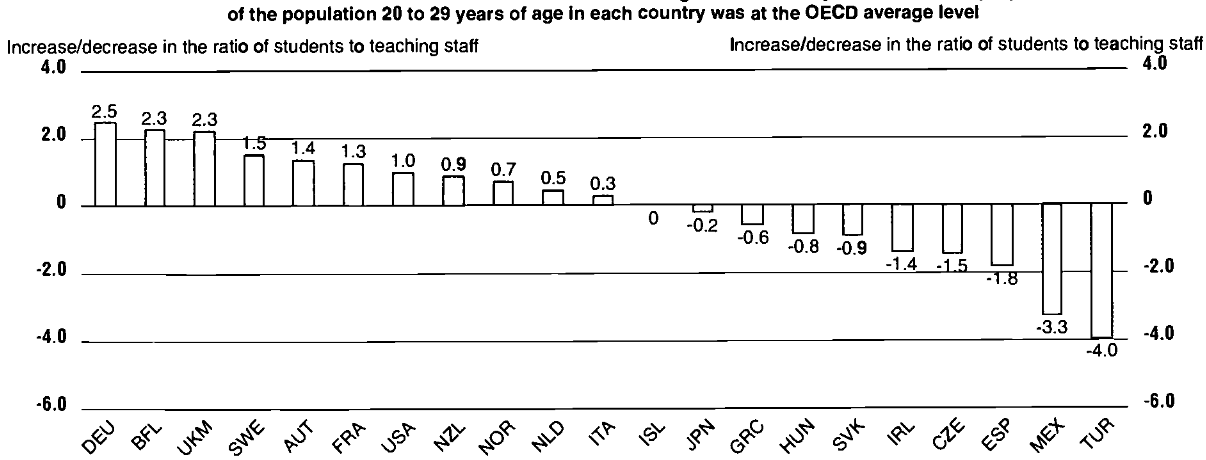
A. Estimated increase/decrease in expenditure on educational institutions as a percentage of GDP if the proportion of the population 5 to 19 and 20 to 29 years of age in each country was at the OECD average level



B. Estimated increase/decrease in ratio of students to teaching staff for primary and secondary education if the proportion of the population 5 to 19 years of age in each country was at the OECD average level



C. Estimated increase/decrease in ratio of students to teaching staff for tertiary education if the proportion of the population 20 to 29 years of age in each country was at the OECD average level



Countries are ranked in descending order of the values in Charts A, B and C.

Source: OECD. Tables A1.1, B1.1*c* and D5.1.

In some countries, expenditure on education appears relatively low in proportion to the size of the youth population.

In Austria, Denmark, Germany, Italy and Switzerland, educational expenditure as a percentage of GDP would be expected to rise by 0.7 percentage point or more if the relative size of the youth population in these countries were at the OECD average. By contrast, in Ireland, Korea, Mexico and Turkey, expenditure on education would be expected to fall by at least 0.7 percentage point if the youth population in these countries were at the OECD average (Chart A1.3*a*).

The larger the youth population, the higher the demand for teachers.

Variations in the size of the youth population between countries reflect differences in the demand for teachers, from the pre-primary to the tertiary level. Charts A1.3*b* and A1.3*c* show the changes that would occur in the ratios of students to teaching staff in primary and secondary education, and in tertiary education if the population profiles were the same in all OECD countries, other factors remaining equal. If enrolment patterns were equal in all OECD countries, the ratio of students to teaching staff would be expected to rise by two students or more in primary and secondary education in Denmark, Germany, Italy, Japan and Spain, and to fall by more than three students in Ireland, Mexico and Turkey.

DEFINITIONS AND METHODOLOGIES

Data refer to 1998/1999 and derive from the 1999 UOE data collection and from the World Education Indicators Pilot Project. Projections are based on the UN Population Database.

Columns 1 to 3 in Table A1.1 show the percentage of five to 14, 15 to 19 and 20 to 29-year-olds in the total population. These data refer to 1998/1999 and are based on the UOE data collection and the World Education Indicators Pilot Project.

Columns 4 to 9 show the changes in the sizes of the respective populations over the period 1995 to 2010. The changes are expressed as percentages relative to the size of the population in 2000 (Index = 100). The statistics cover residents in the country, regardless of citizenship and of educational or labour market status. These projections derive from the UN Population Database.

Column 10 shows the number of students enrolled as a percentage of the employed population 25 to 64 years of age.

The methodology that was used for the calculation of educational expenditure as a percentage of GDP and for the calculation of expected enrolment and expected difference in expenditure (Chart A1.3) is described in Annex 3.

Table A1.1. Relative size and expected changes of the school-age population

Size of the population at the age of primary/lower secondary, upper secondary and tertiary education as a percentage of the total population

	Percentage of the population (1999)			Change in the size of the population (2000 = 100)						Number of students enrolled as a percentage of the employed population 25 to 64 years of age (1999)
				Ages 5-14		Ages 15-19		Ages 20-29		
	Ages 5-14	Ages 15-19	Ages 20-29	1995	2010	1995	2010	1995	2010	
OECD countries										
Australia	14	7	15	98	98	96	104	101	103	80
Austria	12	6	14	98	87	93	99	113	97	53
Belgium	12	6	13	100	87	103	100	108	94	72
Canada	14	7	14	97	91	96	106	101	106	58
Czech Republic	12	7	16	108	73	126	85	89	79	54
Denmark	12	5	14	90	99	117	124	111	83	54
Finland	13	6	12	100	89	99	99	104	102	62
France	13	7	14	102	94	100	95	105	95	68
Germany	11	6	12	102	84	93	95	122	104	53
Greece	11	7	15	113	88	112	77	101	81	m
Hungary	12	7	16	104	79	129	92	91	78	70
Iceland	16	8	15	97	98	99	106	100	101	72
Ireland	15	9	16	114	101	104	77	87	97	80
Italy	10	5	15	102	89	116	95	115	74	58
Japan	10	6	15	112	101	115	80	101	76	45
Korea	14	8	18	106	100	104	90	104	84	66
Luxembourg	12	6	13	90	103	95	113	101	95	50
Mexico	23	11	19	98	100	102	105	92	101	m
Netherlands	12	6	14	95	88	101	109	117	92	55
New Zealand	15	7	14	96	100	99	109	101	105	76
Norway	13	6	14	92	98	102	117	111	94	58
Poland	15	9	15	117	78	96	74	88	104	75
Portugal	11	7	16	108	91	120	86	98	74	58
Slovak Republic	15	8	16	110	76	107	82	89	94	m
Spain	10	7	17	114	89	126	78	102	69	76
Sweden	13	6	13	91	78	101	122	109	101	67
Switzerland	12	6	13	93	91	94	109	113	100	44
Turkey	21	11	18	104	108	100	92	86	97	88
United Kingdom	13	6	13	99	89	97	103	111	102	69
United States	15	7	14	96	94	92	109	103	113	64
Country mean	**13**	**7**	**15**	**102**	**91**	**104**	**98**	**102**	**93**	**64**
WEI participants										
Argentina	19	9	16	98	104	102	104	86	108	m
Brazil	21	11	18	104	97	96	92	92	109	m
Chile	19	8	16	94	98	95	113	102	110	m
China	18	7	17	99	85	98	101	114	99	m
Egypt	23	12	17	99	100	84	103	89	136	m
India	m	m	m	96	99	88	110	94	120	m
Israel	19	9	16	94	105	93	111	88	113	m
Indonesia	21	11	19	101	99	99	99	93	104	m
Jordan	m	m	m	89	126	90	128	89	124	m
Malaysia	22	10	18	91	102	87	119	91	121	m
Paraguay	26	11	16	91	114	81	121	89	140	m
Philippines	25	12	16	94	108	94	114	89	122	m
Russian Federation	14	8	14	120	75	91	67	94	112	m
Sri Lanka	23	11	19	112	97	92	80	95	109	m
Thailand	16	9	19	107	90	109	87	100	93	m
Uruguay	16	8	15	97	103	108	108	92	98	m
Zimbabwe	27	13	18	95	97	84	112	90	131	m

Source: OECD. See Annex 3 for notes on methodology.

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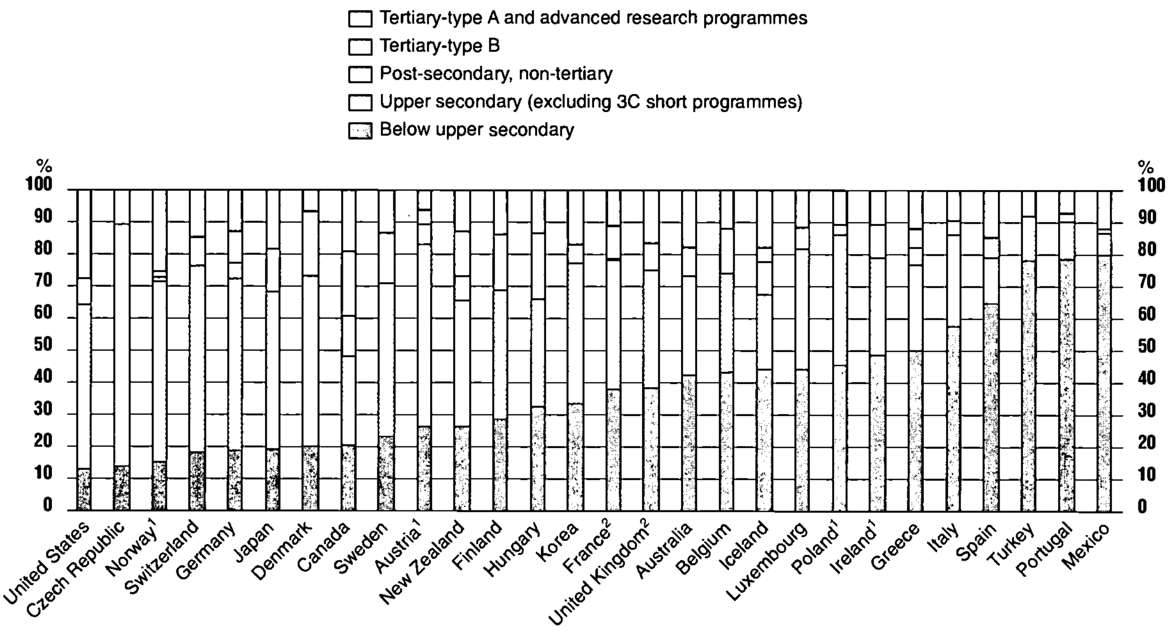
EDUCATIONAL ATTAINMENT OF THE ADULT POPULATION

- In 16 out of 28 OECD countries, more than 60 per cent of the population aged 25 to 64 have completed at least upper secondary education.
- In Italy, Mexico, Portugal, Spain and Turkey more than half of the population aged 25 to 64 have not completed upper secondary education. The proportion of the population aged 25 to 64 who have completed secondary education is equal to or exceeds 80 per cent in the Czech Republic, Denmark, Germany, Japan, Norway, Switzerland and the United States.

Chart A2.1. **Educational attainment of the population (1999)**

Distribution of the population 25 to 64 years of age, by level of educational attainment



1. Year of reference 1998.
2. Not all ISCED 3 programmes meet minimum requirements for ISCED 3C long programmes. See Annex 3 for notes.

Countries are ranked in descending order of the percentage of the population who have completed at least upper secondary education.

Source: OECD. Table A2.1a.

POLICY CONTEXT

This indicator shows a profile of the educational attainment of the adult population and the labour force...

A well-educated and well-trained population is important for the social and economic well-being of countries and individuals. Education plays a key role in providing individuals with the knowledge, skills and competencies to participate effectively in society. Education also contributes to an expansion of scientific and cultural knowledge.

... as a proxy for the knowledge, skills and competencies of populations.

The level of educational attainment of the population is a commonly used proxy for the stock of "human capital", that is, the skills available in the population and the labour force. This indicator shows the level of educational attainment of the population and the labour force. It serves as a backdrop for comparing current participation and completion rates between countries. Data are broken down by gender and by age group.

EVIDENCE AND EXPLANATIONS

Countries differ widely in the distribution of educational attainment across their populations.

In 16 out of 28 OECD countries, more than 60 per cent of the population aged 25 to 64 have completed at least upper secondary education (Table A2.2*a*). This refers to those who have completed educational programmes at ISCED-97 levels 3A or 3B, or long programmes at ISCED-97 level 3C. Thus, those who have completed ISCED-97 level 3C short programmes are excluded from Table A2.2*a*. The proportion is equal to or exceeds 80 per cent in the Czech Republic, Denmark, Germany, Japan, Norway, Switzerland and the United States. In other countries, especially in southern Europe, the educational structure of the adult population shows a different profile: in Italy, Mexico, Portugal, Spain and Turkey, more than half of the population aged 25 to 64 years have not completed upper secondary education.

Educational attainment is generally higher among people in the labour force than among adults of working age outside it.

A comparison between the distribution of educational attainment in the labour force aged 25 to 64, and the distribution of educational attainment in the total population in the same age range shows a higher percentage of people in the labour force with upper secondary and tertiary qualifications (see Tables A2.1*a* and A2.1*b*). Across OECD countries, an average of 62 per cent of the adult population have completed at least upper secondary education, but in the adult labour force this figure is 65 per cent. In Belgium, Hungary and Italy, upper secondary and tertiary attainment in the adult population and in the labour force differs by 9 per cent or more.

Differences in educational attainment between younger and older people offer an indirect measure of the evolution of the stock of human capital.

A comparison of the attainment of the population aged 25 to 34 years with that of the age group 55 to 64 shows that the proportion of individuals who have not completed upper secondary education has been shrinking in all OECD countries. This is especially striking in countries whose adult population generally has a lower attainment level. In younger age groups, differences between countries in the level of educational attainment are less pronounced. Many countries currently showing low attainment in the adult population are expected to move closer to those with higher attainment levels. In Korea and Spain, the proportion of individuals aged 25 to 34 with at least upper secondary attainment is more than three times as high as in the age group 55 to 64 (Table A2.2*a*).

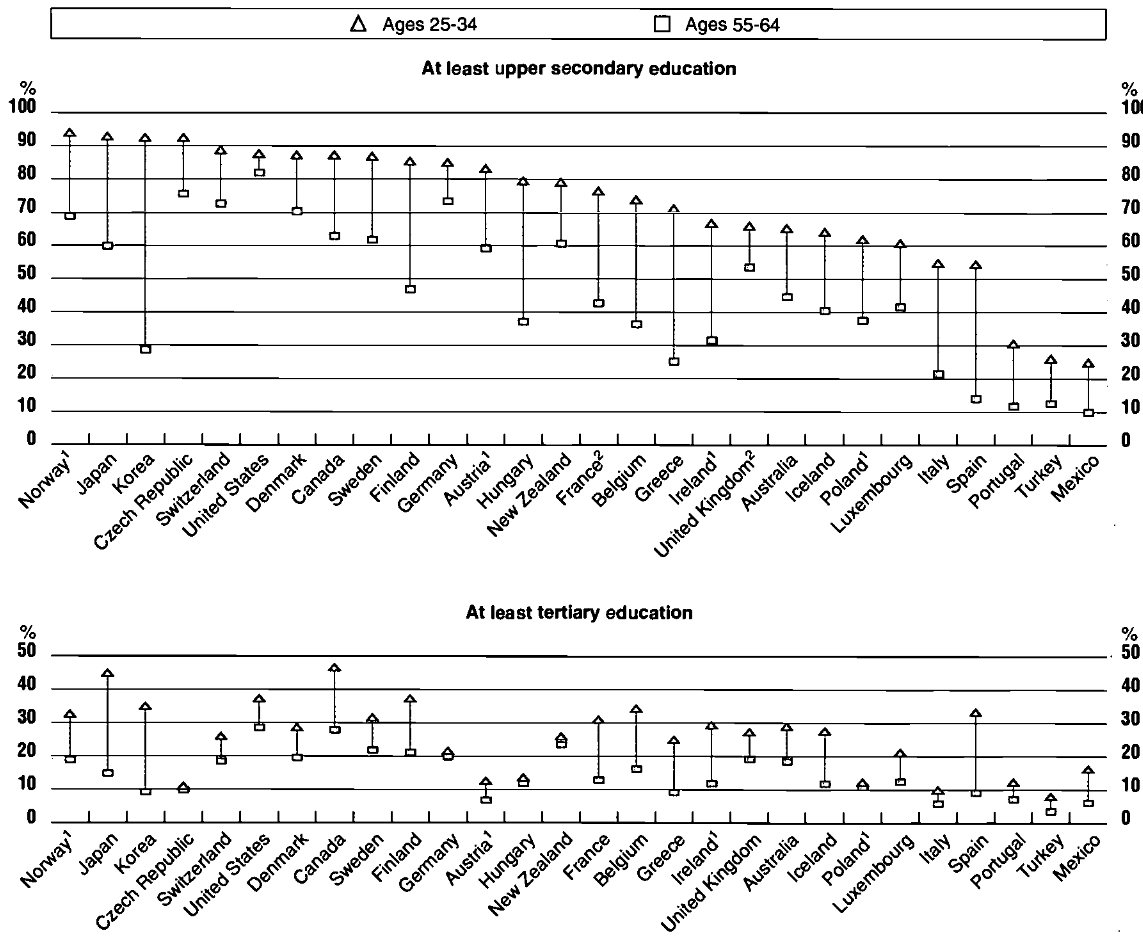
There has been an increase in the proportion of young people who have attained a qualification equivalent to tertiary-type A and advanced research programmes.

The proportion of 25 to 64-year-olds who have completed tertiary-type A or advanced research programmes ranges among OECD countries from less than 10 per cent in Austria, Denmark, Italy, Portugal and Turkey to 20 per cent or more in the Netherlands, Norway and the United States. However, certain countries also have a vocational tradition at the tertiary level (tertiary-type B). The proportion of persons who have attained tertiary-type B level is equal to or exceeds 13 per cent in Belgium, Canada, Denmark, Finland, Japan, New Zealand and Sweden (Table A2.2*b*).

The rising skill requirements of labour markets, an increase in unemployment during recent years and higher expectations by individuals and society have influenced the proportion of young people who obtain at least a tertiary qualification.

Chart A2.2. **Educational attainment of the population, by age group (1999)**

Percentage of the population aged 25 to 34 and 55 to 64 years of age that have attained at least upper secondary or at least tertiary education



1. Year of reference 1998.
2. Not all ISCED 3 programmes meet minimum requirements for ISCED 3C long programmes. See notes in Annex 3.

Countries are ranked in descending order of the percentage of the population 25 to 34 years of age who have completed at least upper secondary education.

Source: OECD. Table A2.2*a*, *b*.

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In Japan and Korea, although 14 and 9 per cent respectively of people in the 55 to 64 age group have at least a tertiary qualification, among 25 to 34-year-olds the proportion rises to 45 and 35 per cent respectively. In Greece, Iceland, Ireland, Korea, Mexico and Spain, the proportion of graduates of tertiary-type A and advanced research programmes is three times as high in this younger age group as in the older cohort (Chart A2.2).

Men have on average a higher level of attainment than women...

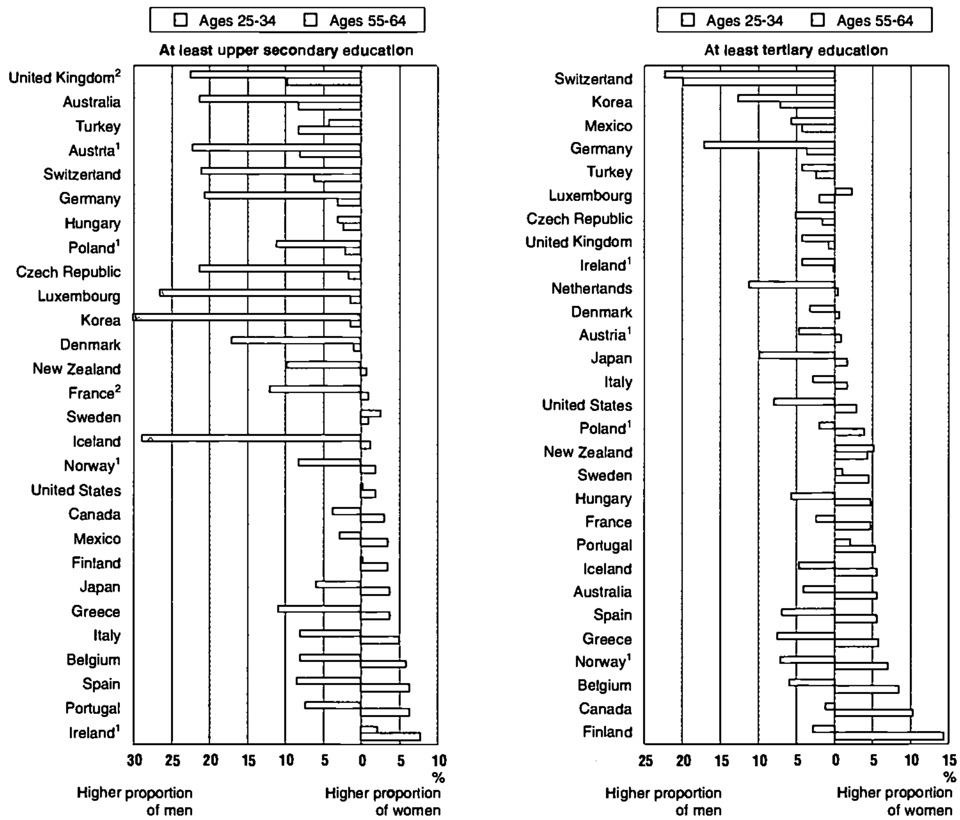
In 19 out of 28 countries, a larger proportion of men than women aged 25 to 64 years have attained at least upper secondary education. This is the case in the older age groups in all countries except Finland, Ireland, Sweden and the United States. In tertiary qualifications, the gap between men and women in the 25 to 64 age group in OECD countries is 6 percentage points or more in favour of men in Germany, Japan, Korea, Luxembourg, Mexico and Switzerland (Table A2.2*c*).

... but the trend has reversed among the younger generation in many countries.

Younger women, however, are far more likely than older women to have an upper secondary or even a tertiary qualification. In 18 out of 29 countries, more than twice as many women aged 25 to 34 have attained at least tertiary education as women aged 55 to 64 years.

Chart A2.3. **Gender differences in educational attainment, by age group (1999)**

Difference between women and men aged 25 to 34 and 55 to 64 years of age as a percentage of the population that has attained at least upper secondary or at least tertiary education



1. Year of reference 1998.
2. Not all ISCED 3 programmes meet minimum requirements for ISCED 3C long programmes. See notes in Annex 3.

Countries are ranked in ascending order of the difference between women and men as a percentage of the population 25 to 34 years of age that has attained at least upper secondary or tertiary education.

Source: OECD. Table A2.2c.

In 17 out of 29 countries, a higher percentage of women than men in the age group 25 to 34 years hold an upper secondary qualification. This trend is more visible in tertiary education. Overall, a higher proportion of women than of men hold a tertiary degree in 13 out of 29 countries (Table A2.2c), but in 20 out of 29 countries among the age group 25 to 34 years. Among this younger age group, Switzerland is the only country with a 20 per cent gap in tertiary attainment rates in favour of men (Chart A2.3).

DEFINITIONS AND METHODOLOGIES

Data derive from National Labour Force Surveys and use the International Standard Classification of Education (ISCED-97).

The attainment profiles shown here are based on the percentage of the population or of the labour force aged 25 to 64 years that has completed a specified level of education. The International Standard Classification of Education (ISCED-97) is used to define the levels of education. The level post-secondary non-tertiary (Level 4) was introduced in ISCED-97 to cover programmes that straddle the boundary between upper secondary and tertiary education. In ISCED-76, such programmes were placed either in upper secondary (Level 3) or tertiary education (Level 5). Tertiary education in ISCED-97 comprises only two levels (Level 5 and Level 6) instead of the previous three levels (Levels 5, 6 and 7). The Level 5 consists of programmes that do not lead directly to an advanced research qualification, while Level 6 is now reserved for programmes leading to advanced research qualifications, such as a Ph.D. Tertiary education (Level 5) is further sub-divided into two categories, ISCED 5A and 5B. ISCED 5A, tertiary-type A education, covers more theoretical programmes that give access to advanced research programmes and to professions with high general skills requirements, while ISCED 5B, tertiary-type B education, covers more practical or occupationally specific programmes that provide participants with a qualification of immediate relevance to the labour market. Level 5 in ISCED-97 corresponds only partly to level 5 in ISCED-76, and level 6 in ISCED-97 does not correspond at all to level 6 in ISCED-76. See Annex 3 for a description of ISCED-97 education levels and mappings for each country.

Data on population and educational attainment are taken from OECD and EUROSTAT databases, which are compiled from National Labour Force Surveys. See Annex 3 for national sources.

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Table A2.1*a*. **Educational attainment of the population (1999)**

Distribution of the ***population*** *25 to 64 years of age, by highest level of education attained*

	Pre-primary and primary education	Lower secondary education	Upper secondary education			Post-secondary non-tertiary education	Tertiary-type B education	Tertiary-type A and advanced research programmes	All levels of education
	ISCED 0/1	ISCED 2	ISCED 3C Short	ISCED 3C Long/3B	ISCED 3A	ISCED 4	ISCED 5B	ISCED 5A/6	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
OECD countries									
Australia	x(2)	43	a	10	21	x(5)	9	18	100
Austria[1]	x(2)	26	a	51	6	6	5	6	100
Belgium	20	23	a	7	24	x(4)	14	12	100
Canada	7	13	a	x(5)	28	13	20	19	100
Czech Republic	x(2)	14	x(4)	44	32	x(5)	x(8)	11	100
Denmark	n	20	a	46	8	x(5)	20	7	100
Finland	x(2)	28	a	a	40	x(5)	17	14	100
France	20	18	28	3	10	n	10	11	100
Germany	2	17	a	51	2	5	10	13	100
Greece	41	9	a	4	23	5	6	12	100
Hungary	4	29	a	26	8	20	x(6,8)	14	100
Iceland	2	35	7	a	23	10	5	18	100
Ireland[1]	23	26	a	a	30	x(5,7)	10	11	100
Italy	25	32	1	6	23	4	x(8)	9	100
Japan	x(2)	19	a	x(5)	49	x(9)	13	18	100
Korea	18	16	a	x(5)	44	a	6	17	100
Luxembourg	24	14	6	27	11	a	7	12	100
Mexico	59	21	a	7	a	a	1	12	100
Netherlands	12	23	10	18	14	x(7,8)	2	20	100
New Zealand	x(2)	26	a	20	19	7	14	13	100
Norway[1]	n	15	a	38	18	1	2	25	100
Poland[1]	x(2)	22	24	a	40	3	x(8)	11	100
Portugal	67	12	x(5)	x(5)	11	x(5)	3	7	100
Spain	42	23	x(5)	5	9	x(7)	6	15	100
Sweden	11	12	a	x(5)	48	x(7)	16	13	100
Switzerland	x(2)	18	a	51	7	x(4,5)	9	15	100
Turkey	68	10	a	4	10	a	x(8)	8	100
United Kingdom	x(2)	18	27	16	14	x(9)	8	17	100
United States	5	8	x(5)	x(5)	51	x(5)	8	27	100
Country mean	**16**	**20**	**4**	**15**	**21**	**3**	**8**	**14**	**100**
WEI participants									
Brazil[1]	63	13	x(5)	x(5)	17	a	x(8)	7	100
Chile[1]	31	26	x(5)	x(5)	34	a	1	8	100
Indonesia	64	13	x(5)	x(5)	18	n	2	3	100
Jordan	25	24	x(5)	x(5)	15	a	17	19	100
Malaysia[1]	44	21	x(5)	x(5)	27	m	n	8	100
Peru[1]	47	7	x(5)	x(5)	30	a	7	9	100
Philippines	44	12	x(5)	x(5)	32	x(5)	a	11	100
Sri Lanka[1]	33	32	x(5)	x(5)	34	n	n	2	100
Thailand[1]	75	9	x(5)	x(5)	6	n	2	7	100
Tunisia	78	14	x(5)	x(5)	3	a	2	3	100
Uruguay[1]	53	16	x(5)	x(5)	22	a	9	x(7)	100
Zimbabwe	64	8	x(5)	x(5)	18	a	9	1	100

Note: x indicates that the data are included in another column. The column of reference is given in brackets after "x". *E.g.*, x(2) means that data are included in column 2.

1. Year of reference 1998.

Source: OECD. See Annex 3 for a description of ISCED-97 levels, ISCED-97 country mappings and national data sources.

Table A2.1b. **Educational attainment of the labour force (1999)**

Distribution of the labour force 25 to 64 years of age, by highest level of education attained

	Pre-primary and primary education	Lower secondary education	Upper secondary education			Post-secondary non-tertiary education	Tertiary-type B education	Tertiary-type A and advanced research programmes	All levels of education
	ISCED 0/1	ISCED 2	ISCED 3C Short	ISCED 3C Long/3B	ISCED 3A	ISCED 4	ISCED 5B	ISCED 5A/6	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
OECD countries									
Australia	x(2)	37	a	12	21	x(5)	10	20	100
Austria[1]	x(2)	20	a	54	6	7	5	8	100
Belgium	12	22	a	8	26	x(4)	17	15	100
Canada	4	11	a	x(5)	28	13	22	21	100
Czech Republic	x(2)	10	x(4)	45	33	x(5)	x(8)	12	100
Denmark	n	16	a	47	7	x(5)	22	7	100
Finland	x(2)	24	a	a	41	x(5)	19	16	100
France	14	18	30	3	10	n	12	12	100
Germany	2	13	a	52	2	5	11	15	100
Greece	34	10	a	5	22	6	7	16	100
Hungary	1	19	a	31	8	24	x(6,8)	17	100
Iceland	2	34	7	a	23	11	5	18	100
Ireland[1]	16	25	a	a	32	x(5,7)	13	13	100
Italy	14	33	1	6	27	6	x(8)	13	100
Japan	x(2)	18	a	x(5)	49	x(9)	12	21	100
Korea	17	16	a	x(5)	42	a	6	19	100
Luxembourg	19	12	6	28	12	a	8	14	100
Mexico	54	23	a	7	a	a	2	15	100
Netherlands	8	20	10	20	15	x(7,8)	3	24	100
New Zealand	x(2)	22	a	22	19	8	14	14	100
Norway[1]	n	13	a	39	18	1	2	27	100
Poland[1]	x(2)	17	26	a	41	3	x(8)	13	100
Portugal	64	13	x(5)	x(5)	12	x(5)	3	8	100
Spain	32	25	x(5)	6	11	x(7)	8	19	100
Sweden	9	12	a	x(5)	49	x(7)	16	15	100
Switzerland	x(2)	16	a	51	7	x(4,5)	10	16	100
Turkey	63	10	a	5	11	a	x(8)	11	100
United Kingdom	x(2)	13	28	17	15	x(9)	9	19	100
United States	3	7	x(5)	x(5)	51	x(5)	9	30	100
Country mean	**13**	**18**	**4**	**16**	**22**	**3**	**8**	**16**	**100**
WEI participants									
Brazil[1]	60	13	x(5)	x(5)	18	a	x(8)	9	100
Chile[1]	26	25	x(5)	x(5)	37	a	1	11	100
Indonesia	65	12	x(5)	x(5)	17	n	2	3	100
Jordan	25	24	x(5)	x(5)	16	a	16	19	100
Malaysia[1]	39	21	x(5)	x(5)	30	m	n	11	100
Peru[1]	46	7	x(5)	x(5)	30	a	8	9	100
Philippines	43	13	x(5)	x(5)	32	x(5)	a	11	100
Sri Lanka[1]	31	31	x(5)	x(5)	35	n	n	2	100
Thailand[1]	74	9	x(5)	x(5)	6	x(5)	2	8	100
Uruguay[1]	48	16	x(5)	x(5)	25	a	11	x(7)	100
Zimbabwe	65	8	x(5)	x(5)	17	a	10	1	100

Note: x indicates that the data are included in another column. The column of reference is given in brackets after "x". *E.g.*, x (2) means that data are included in column 2.

1. Year of reference 1998.

Source: OECD. See Annex 3 for a description of ISCED-97 levels, ISCED-97 country mappings and national data sources.

Table A2.2*a*. **Population that has attained at least upper secondary education (1999)**

Percentage of the population that has attained at least upper secondary education, by age group

	At least upper secondary education[1]				
	25-64	25-34	35-44	45-54	55-64
OECD countries					
Australia	57	65	59	55	44
Austria[2]	74	83	78	69	59
Belgium	57	73	61	50	36
Canada	79	87	83	78	62
Czech Republic	86	93	89	85	75
Denmark	80	87	80	79	70
Finland	72	86	82	67	46
France[3]	62	76	65	57	42
Germany	81	85	85	81	73
Greece	50	71	58	42	24
Hungary	67	80	76	70	36
Iceland	56	64	59	53	40
Ireland[2]	51	67	56	41	31
Italy	42	55	50	37	21
Japan	81	93	92	79	60
Korea	66	93	72	47	28
Luxembourg	56	61	57	52	41
Mexico	20	25	22	16	9
Netherlands	m	m	m	m	m
New Zealand	74	79	77	71	60
Norway[2]	85	94	89	79	68
Poland[2]	54	62	59	53	37
Portugal	21	30	21	15	11
Spain	35	55	41	25	13
Sweden	77	87	81	74	61
Switzerland	82	89	84	79	72
Turkey	22	26	23	18	12
United Kingdom[3]	62	66	63	60	53
United States	87	88	88	88	81
Country mean	**62**	**72**	**66**	**58**	**45**
WEI participants					
Brazil[2]	24	29	27	21	12
Chile[2]	43	55	45	35	24
Indonesia	22	33	21	15	9
Jordan	51	55	55	43	25
Malaysia[2]	35	50	35	20	10
Peru[2]	46	58	48	35	24
Philippines	44	55	45	34	24
Sri Lanka[2]	36	46	36	31	21
Thailand[2]	16	23	17	9	6
Tunisia	8	11	9	6	3
Uruguay[2]	32	39	34	28	20
Zimbabwe	29	51	19	11	7

1. Excluding 3C Short programmes.
2. Year of reference 1998.
3. Not all ISCED 3 programmes meet minimum requirements for ISCED 3C Long programmes. See Annex 3 for notes.

Source: OECD. See Annex 3 for a description of ISCED-97 levels, ISCED-97 country mappings and national data sources.

Table A2.2*b*. **Population that has attained tertiary education (1999)**

Percentage of the population that has attained tertiary-type B *and tertiary-type* A *and advanced research programmes, by age group*

	Tertiary-type B					Tertiary-type A and advanced research programmes				
	25-64	25-34	35-44	45-54	55-64	25-64	25-34	35-44	45-54	55-64
OECD countries										
Australia	9	9	10	10	7	18	20	19	18	10
Austria[1]	5	6	5	5	2	6	7	7	6	4
Belgium	14	18	15	12	8	12	16	13	11	7
Canada	20	24	22	18	14	19	23	18	20	14
Czech Republic	x	x	x	x	x	11	11	13	10	9
Denmark	20	19	22	22	15	7	10	6	5	4
Finland	17	22	20	15	11	14	16	15	14	9
France	10	16	11	8	5	11	15	10	10	7
Germany	10	9	11	10	10	13	13	15	14	10
Greece	6	9	7	4	3	12	17	14	11	6
Hungary	x	x	x	x	x	14	14	14	14	11
Iceland	5	5	5	5	3	18	22	20	15	9
Ireland[1]	10	13	11	9	6	11	16	11	7	5
Italy	x	x	x	x	x	9	10	11	10	5
Japan	13	22	17	9	5	18	23	25	16	9
Korea	6	12	5	1	1	17	23	19	11	8
Luxembourg	7	8	6	6	5	12	13	11	15	7
Mexico	1	2	1	n	n	12	14	14	9	5
Netherlands	2	2	3	2	2	20	23	22	19	15
New Zealand	14	10	14	16	16	13	16	14	13	7
Norway[1]	2	2	3	2	n	25	31	26	23	18
Poland[1]	x	x	x	x	x	11	12	10	11	10
Portugal	3	3	3	3	2	7	9	7	6	4
Spain	6	11	7	3	2	15	22	16	12	7
Sweden	16	21	17	14	10	13	11	14	16	12
Switzerland	9	9	11	9	7	15	17	16	14	11
Turkey	x	x	x	x	x	7	8	7	8	5
United Kingdom	8	8	9	8	7	17	19	17	16	12
United States	8	9	9	9	5	27	29	27	30	23
Country mean	**8**	**9**	**8**	**7**	**5**	**14**	**16**	**15**	**13**	**9**
WEI participants										
Brazil[1]	x	x	x	x	x	7	7	9	9	5
Chile[1]	1	1	1	1	n	8	10	9	8	4
Indonesia	2	2	2	2	1	3	4	3	2	1
Jordan	17	21	18	8	3	19	17	22	23	14
Malaysia[1]	a	a	a	a	a	8	11	8	5	3
Peru[1]	7	10	6	5	4	9	8	10	8	6
Philippines	a	a	a	a	a	11	13	12	10	7
Sri Lanka[1]	a	a	a	a	a	2	3	1	2	1
Thailand[1]	2	4	2	1	n	7	8	9	6	3
Tunisia	2	3	2	1	n	3	3	4	2	1
Uruguay[1]	x	x	x	x	x	9	9	11	9	8
Zimbabwe	9	13	9	7	5	1	2	2	1	1

Note: x indicates that the data are included with tertiary-type A and advanced research programmes.

1. Year of reference 1998.

Source: OECD. See Annex 3 for a description of ISCED-97 levels, ISCED-97 country mappings and national data sources.

Table A2.2c. **Educational attainment of the population, by gender (1999)**

Percentage of the population that has attained at least upper secondary or at least tertiary education, by age group and gender

		At least upper secondary education[1]					At least tertiary (type A or B or advanced research programmes)				
		25-64	25-34	35-44	45-54	55-64	25-64	25-34	35-44	45-54	55-64
Australia	Men	65	70	66	64	54	26	26	27	28	19
	Women	50	61	52	46	33	27	32	31	27	15
Austria[2]	Men	81	87	84	77	70	12	12	13	12	9
	Women	67	79	72	61	48	10	13	12	8	4
Belgium	Men	57	70	59	52	40	25	30	27	24	18
	Women	56	76	62	48	32	26	38	29	21	12
Canada	Men	79	86	82	78	64	37	42	38	37	28
	Women	80	89	85	78	60	41	52	42	39	27
Czech Republic	Men	91	93	93	91	86	13	12	15	12	12
	Women	81	92	86	78	65	9	10	11	8	7
Denmark	Men	83	88	80	84	75	26	28	25	28	21
	Women	76	87	79	74	58	27	29	33	26	17
Finland	Men	70	84	79	66	46	28	30	30	28	22
	Women	73	87	84	67	46	34	45	41	30	19
France[3]	Men	65	76	67	61	48	21	29	21	18	14
	Women	59	77	63	52	36	22	33	22	17	11
Germany	Men	86	87	87	87	83	28	23	30	32	28
	Women	76	84	82	76	63	17	20	21	18	11
Greece	Men	52	69	59	47	30	20	22	24	20	12
	Women	48	73	57	38	19	16	28	18	11	5
Hungary	Men	37	81	36	39	32	13	11	12	15	14
	Women	47	79	51	48	29	14	16	16	14	9
Iceland	Men	63	64	66	64	55	22	25	25	20	14
	Women	49	65	52	42	26	23	30	26	19	9
Ireland[2]	Men	48	63	52	39	30	23	30	24	19	14
	Women	54	71	60	42	32	20	29	20	14	9
Italy	Men	44	53	50	41	25	10	9	12	11	7
	Women	41	58	50	33	17	9	11	11	9	4
Japan	Men	81	91	91	78	63	35	44	44	30	19
	Women	81	95	93	79	57	29	46	39	20	10
Korea	Men	75	93	80	60	43	29	39	32	19	15
	Women	58	92	64	32	13	17	31	16	6	2
Luxembourg	Men	61	62	64	62	55	22	22	21	25	5
	Women	51	60	57	46	28	15	20	14	5	7
Mexico	Men	20	23	22	17	11	16	19	19	14	9
	Women	21	27	22	14	8	10	14	12	6	3
Netherlands	Men	m	m	m	m	m	25	25	28	25	23
	Women	m	m	m	m	m	20	25	22	17	11
New Zealand	Men	75	79	78	75	65	24	24	26	26	20
	Women	72	80	77	68	55	30	28	31	32	26
Norway[2]	Men	85	93	89	79	72	27	29	27	26	22
	Women	84	95	89	79	64	28	36	30	24	15
Poland[2]	Men	57	63	61	56	43	10	10	9	11	11
	Women	51	61	56	50	32	11	14	11	11	9
Portugal	Men	20	27	17	12	11	8	9	5	4	6
	Women	23	34	23	15	3	11	15	11	9	8
Spain	Men	37	51	42	29	18	22	31	24	19	12
	Women	34	58	40	21	9	20	36	22	12	5
Sweden	Men	75	87	79	71	60	27	29	29	28	21
	Women	78	88	84	77	62	30	34	33	31	22
Switzerland	Men	87	92	86	85	82	34	36	34	34	29
	Women	77	86	81	74	62	14	16	17	12	7
Turkey	Men	25	30	27	21	13	9	10	9	10	7
	Women	18	22	18	15	9	6	7	6	7	3
United Kingdom[3]	Men	69	70	71	70	61	26	29	28	26	20
	Women	53	60	56	50	39	24	28	25	22	16
United States	Men	86	87	87	88	81	37	36	36	41	32
	Women	87	89	89	88	81	35	39	37	36	24
Country mean	**Men**	**63**	**72**	**66**	**60**	**51**	**23**	**25**	**24**	**22**	**17**
	Women	**58**	**72**	**63**	**53**	**39**	**21**	**27**	**23**	**18**	**11**

1. Excluding ISCED 3C Short programmes.
2. Year of reference 1998.
3. Not all ISCED 3 programmes meet minimum requirements for ISCED 3C Long programmes.

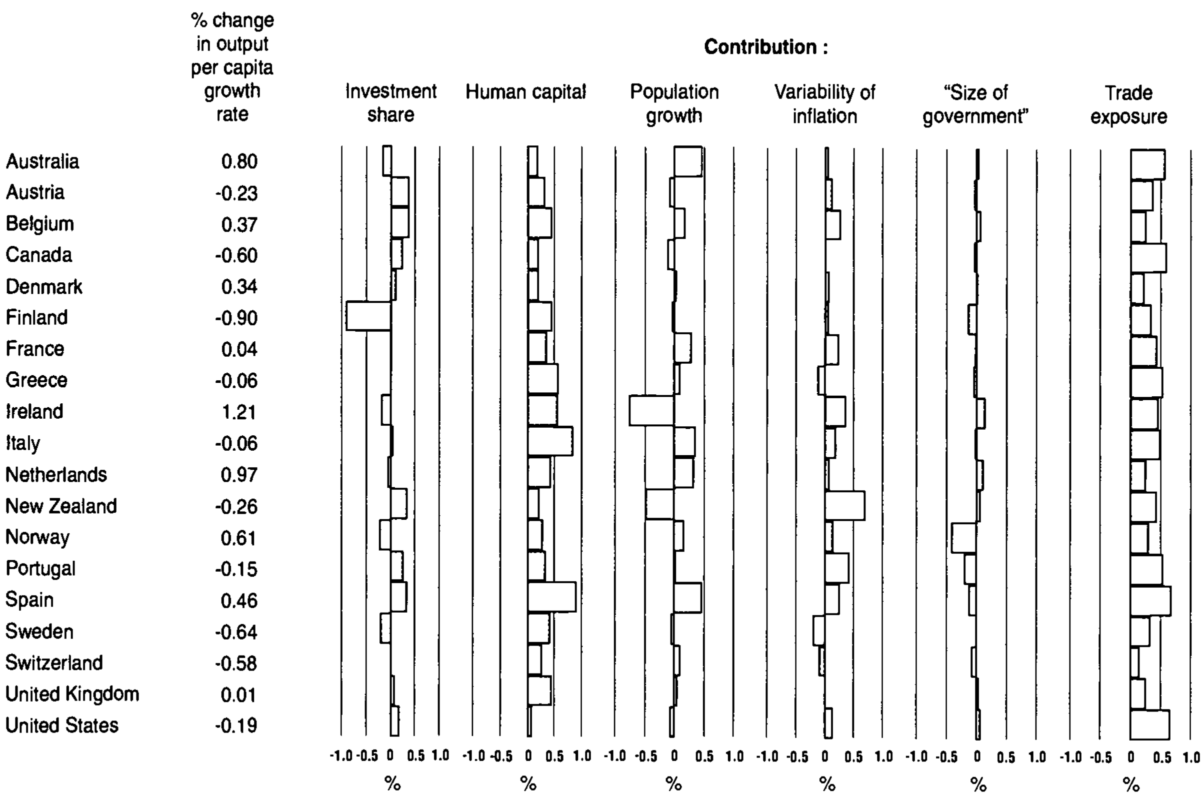
Source: OECD. See Annex 3 for a description of ISCED-97 levels, ISCED-97 country mappings and national data sources.

LINKS BETWEEN HUMAN CAPITAL AND ECONOMIC GROWTH

- The accumulation of physical capital and human capital is important for growth, and differences between countries in this respect help significantly to explain the observed differences in growth patterns. In particular, the evidence suggests that investment in education may have beneficial external effects that make social returns to schooling greater than private returns, although improvements to education systems may take time to make significant impacts on average skills in the labour force, especially in ageing populations.
- Public expenditure on health, education and research clearly help to sustain living standards in the long term, and social transfers help to meet social goals, but all these have to be financed. The necessary taxation could negatively affect incentives to save and invest.
- Macroeconomic policy geared towards low inflation and stable, sound public finances contributes to growth, for example by encouraging private accumulation of physical capital and a shift in investment towards projects with higher returns.

Chart A3.1. **Decomposition of changes in annual average growth rates of GDP per capita**

Estimated effect of changes in explanatory variables to changes in output per capita growth rates over the period 1980s to 1990s



Source: OECD Economic Outlook, December 2000. Table A3.1.

A3

POLICY CONTEXT

OECD countries have shown wide disparities in growth in recent decades. The 1990s, in particular, saw some relatively affluent countries (notably the United States) pulling further ahead, while growth in many other countries slowed. Persistent differences in the accumulation of different forms of capital (physical, human, knowledge), market conditions and technological progress – all of which could themselves be influenced by policy and institutions – are potentially important sources of these differences in growth between countries. What is the relative importance of education and human capital in this equation? To address this question, this indicator estimates the effect of changes in explanatory variables, including human capital, on changes in output per capita growth rates over the period 1980 to 1990.

This indicator estimates the effect of changes in explanatory variables, including human capital, on changes in output per capita growth rates over the period 1980 to 1990.

EVIDENCE AND EXPLANATIONS

Although there is agreement on the importance of policy and institutions for growth, the precise mechanisms linking policy to capital accumulation, economic efficiency, technical progress and, ultimately, output growth are still the subject of an intense debate. In particular, policy and institutions may influence private decisions on savings and investment and the formation of human capital. They can also contribute to the overall efficiency with which resources are allocated in the economy, over and above their effects on the accumulation of physical and human capital.

The precise mechanisms linking policy to capital accumulation, economic efficiency, technical progress and, ultimately, output growth are still the subject of an intense debate.

Studies on growth typically assume that formal skills and experience embodied in the labour force represent a form of (human) capital. It can be argued, however, that human capital, like physical capital, is subject to some kind of diminishing returns, so that a more highly trained and skilled workforce would enjoy higher levels of income in the long term, but not necessarily permanently higher rates of growth in income. Similarly, investment in human capital (*e.g.* expenditure on education and training) could have a more permanent impact on growth if high skills and training were to go hand in hand with more intensive research and development and a faster rate of technological progress, or if the existence of a highly skilled labour force were to ease the adoption of new technologies.

In order to shed light on the impact of policy and institutions on output growth in OECD countries, an empirical analysis based on growth regressions was undertaken (for details see *Economic Outlook* No. 68). Chart A3.1 shows the estimated effect of changes in explanatory variables on changes in output per capita growth rates from the 1980s to the 1990s.

The improvement in human capital seems to be a common factor behind growth in recent decades in all OECD countries, especially in Greece, Ireland, Italy and Spain, where the increase in human capital accounted for more than half an extra percentage point of growth in the 1990s compared with the previous decade. The impact might be seen to be larger if the measure of human capital used went beyond levels of formal educational attainment. However, although average levels of human capital have typically been rising – and continually feeding through into higher growth – the relatively slow rates of increase (half to one percentage point per decade) need to be borne in mind in evaluating this result.

The improvement in human capital has been a common factor behind growth in recent decades, and in some countries accounted for more than half a percentage point of growth in the 1990s.

The magnitude of the impact on growth found in this analysis suggests that the economy-wide returns to investment in education may be larger than those experienced by individuals.

The magnitude of the impact on growth found in this analysis suggests that the economy-wide returns to investment in education may be larger than those experienced by individuals (see also indicator E5). This possibly reflects spill-over effects, such as links between levels of education and advances in technology, and more effective use of natural and physical resources, and implies that incentives for individuals to engage in education may be usefully enhanced by policy to reap maximum benefits for society as a whole. However, there are some caveats to this interpretation of the results. First, the impacts found in the analysis may be over-estimated because the indicator of human capital may be acting partially as a proxy for other variables, an issue also raised in some microeconomic studies. In addition, the empirical analysis suggests that the impact is determined with some lack of precision. In any case, the average level of formal education is bound to react only slowly to changes in education policy, as the latter typically affect only young cohorts entering the labour force. Finally, extending the period of formal education may not be the most efficient way of providing workplace skills, and this aspect of education must also be balanced against other (sometimes competing) goals of education systems. Thus, for those countries at the forefront of educational provision, the growth dividend from further increases in formal education may be less marked than that implied in the empirical analysis.

The contribution stemming from changes in the investment rate varies.

The contribution stemming from changes in the investment rate is more mixed. Some countries are estimated to have benefited from an increase in the business investment rate in the past decade (*e.g.*, Austria, Belgium, Canada, New Zealand, Portugal and Spain), while others experienced a negative impact from lower investment rates (*e.g.*, Finland, and to a lesser extent Norway and Sweden). There have also been important changes in policy and institutional settings in each country that have contributed to growth, over and above the changes in inputs of physical and human capital. Most countries have benefited, especially in the 1990s, from lower variability in inflation. The most noticeable examples include New Zealand and Portugal, where about half a percentage point of annual output per capita growth is estimated to be due to this factor, other things being equal.

The size of government has contributed to a marginal slowing of growth in many countries.

By contrast, despite greater fiscal discipline, especially in the last decade, the rise in the size of government has contributed to a marginal slowing of growth in many countries. Exceptions include Ireland and the Netherlands, where a reduction in taxes and expenditure as a proportion of GDP marginally boosted output per capita growth in the 1990s.

The general process of trade liberalisation is estimated to have increased growth by up to two-thirds of a percentage point annually over the past decade.

Finally, the general process of trade liberalisation in which all OECD countries have been involved is estimated to have increased growth by up to two-thirds of a percentage point annually over the past decade. Despite developments in the 1990s, there remain profound differences in the main determinants of economic growth across the OECD countries.

☐ DEFINITIONS AND METHODOLOGIES

Human capital is estimated on the basis of completed levels of education and average years of schooling at each level of education amongst the population of working age. It should be borne in mind that educational attainment is a crude and somewhat narrow proxy for skills and competencies, taking little account of the quality of formal education or of other important dimensions of human capital. It is derived from OECD data (OECD *Education at a Glance*) combined with data from de la Fuente and Doménech (2000). For a definition of the other factors (investment share, population growth, variability of inflation, trade exposure and size of government, see *Economic Outlook* No. 68). Note that government consumption as a percentage of GDP is used as a proxy for the size of government for reasons of data availability. This variable is highly correlated in most countries with tax and non-tax receipts (as a proportion of GDP), although country coverage is more limited.

The calculations are from decompositions of differences in growth rates based on the results of multivariate regressions. Note that the sum of the contributions shown does not correspond to the observed change in output per capita growth rates because the estimated impact of initial levels of GDP per capita and the component unexplained by the regressions are not shown.

Chart A3.1 does not report the estimated effect on growth of different initial conditions (*i.e.* the convergence process) nor does it show the unexplained country-specific effect. The coefficients used to perform the decomposition are from a growth equation that includes variability in inflation, trade exposure and government consumption (as a proportion of GDP) as a proxy for the potential effect of government "size" on growth.

The changes in growth are based on differences in average growth in GDP per person of working age over each decade. The 1980s cover the period 1981 to 1989; the 1990s cover the period up to 1997.

Table A3.1. **Decomposition of changes in annual average growth rates of GDP per capita**

Estimated effect of changes in explanatory variables to changes in output per capita growth rates over the period 1980s to 1990s[1]

	% change in output per capita growth rate	Contribution from:					
		Investment share	Human capital	Population growth	Variability of inflation	"Size of government"[2]	Trade exposure
Australia	0.80	–0.16	0.17	0.46	0.05	0.03	0.57
Austria	–0.23	0.37	0.31	–0.07	0.12	–0.02	0.37
Belgium	0.37	0.37	0.45	0.17	0.26	0.06	0.24
Canada	–0.60	0.24	0.19	–0.10	0.01	–0.02	0.60
Denmark	0.34	0.10	0.20	0.03	0.07	0.01	0.22
Finland	–0.90	–0.91	0.44	–0.03	0.05	–0.13	0.33
France	0.04	0.01	0.35	0.27	0.23	–0.02	0.42
Greece	–0.06	n	0.57	0.09	–0.12	–0.05	0.54
Ireland	1.21	–0.17	0.54	–0.75	0.35	0.13	0.46
Italy	–0.06	0.05	0.84	0.36	0.18	–0.01	0.49
Netherlands	0.97	–0.04	0.43	0.32	0.07	0.10	0.25
New Zealand	–0.26	0.33	0.21	–0.47	0.68	0.06	0.44
Norway	0.61	–0.21	0.27	0.15	0.14	–0.41	0.30
Portugal	–0.15	0.25	0.32	0.02	0.42	–0.20	0.53
Spain	0.46	0.33	0.90	0.46	0.25	–0.12	0.67
Sweden	–0.64	–0.19	0.42	–0.05	–0.20	0.02	0.33
Switzerland	–0.58	0.02	0.26	0.09	–0.09	–0.07	0.14
United Kingdom	0.01	0.08	0.44	0.05	n	0.03	0.25
United States	–0.19	0.19	0.07	–0.06	0.13	0.07	0.65

Note: The calculations are from decompositions of differences in growth rates based on the results of multivariate regressions. The sums of the contributions shown do not correspond to the change in output per capita growth rates because the estimated impact of initial levels of GDP per capita and the component unexplained by the regressions are not shown.

1. Changes in growth are based on differences in average growth in GDP per person of working age over each decade. The 1980s include the period 1981 to 1989; the 1990s cover the period up to 1997.
2. Government consumption as a percentage of GDP is used as a proxy for the size of government due to data unavailability. This variable is highly correlated in most countries with tax and non-tax receipts (as a share of GDP) for which, however, country coverage is more limited.

Source: OECD *Economic Outlook*, December 2000.

FINANCIAL AND HUMAN RESOURCES INVESTED IN EDUCATION

B

Education is an investment in human skills. It can thus help to foster economic growth (see Indicator A3) and enhance productivity, contribute to personal and social development, and reduce social inequality. Like any investment, education has both costs and returns. While the returns to education are examined in Chapter E, this chapter provides a comparative examination of cost patterns in OECD countries, focusing on three aspects of educational spending:

- the resources that each country invests in education, relative to the number of students enrolled, national income and the size of public budgets;
- the ways in which education systems are financed, and the sources from which the funds originate; and
- the apportionment of resources between different resource categories.

HOW MUCH IS SPENT ON EDUCATION?

Effective schools require the right combination of trained and talented personnel, adequate facilities, state-of-the-art equipment and motivated students ready to learn. However, the demand for high-quality education, which can translate into higher costs per student, must be balanced against placing undue burdens on taxpayers. In the absence of absolute standards for the resources per student necessary to ensure optimal returns for either the participant or society as a whole, international comparisons can provide a starting point for discussion by evaluating how countries vary in the extent of their investment in education. **Indicator B1** represents direct public and private expenditure on educational institutions in relation to the number of full-time equivalent students enrolled in these institutions. It also reviews how countries apportion expenditure per student between different levels of education.

Indicator B2 examines the proportion of national resources devoted to educational institutions and the levels of education to which they are directed. This indicator needs to be interpreted in the light of various inter-related supply and demand factors, including the demographic structure of the population (indicator A2), enrolment rates at different levels of education (indicator C1), income per capita, and national price levels for educational resources. The relative size of the youth population (indicator A1), for example, shapes the potential demand for initial education and training in a country. Similarly, participation rates affect educational expenditure: the higher the enrolment rates (other things being equal), the more financial resources will be required.

WHO PAYS FOR EDUCATION?

Cost-sharing between the participants in education and society as a whole is an issue that is under discussion in many countries. This question is especially relevant at the beginning and ending stages of initial education– pre-primary and tertiary education – where full or nearly full public funding is less common.

With increased participation drawing from new client groups and a wider range of educational opportunities, programmes and providers, governments are forging new partnerships to mobilise the necessary resources to pay for education. New policies are designed to allow the different actors and stakeholders to participate more fully and to share the costs and benefits of education more equitably. New funding strategies aim also at influencing student behaviour in ways that make education more cost-effective. As a result, public funding is now increasingly seen as providing only a part, although a very substantial part, of the investment in education. Private sources of funds are playing an increasingly important role. To shed light on these issues, **Indicator B3** examines the relative proportions of funds for educational institutions that derive from public and private sources, in addition to how these proportions have evolved since 1995.

Public budgets remain the main source of funds for education. However, in the second half of the 1990s most OECD countries made major efforts to consolidate public budgets, and education had to compete for more limited public financial support against a wide range of other areas. **Indicator B4** evaluates the change in public spending on education in absolute terms and relative to changes in the size of overall public spending.

HOW ARE FUNDS ALLOCATED?

Through subsidies to students and their families, governments can help to cover the costs of education and related expenditure, with the aim of increasing access to education and reducing social inequalities. Furthermore, public subsidies play an important role in indirectly funding educational institutions. Channelling funding for institutions through students may help to increase competition among institutions and result in greater efficiency in the provision of education. Since aid for student living costs can also serve as a substitute for work as a financial resource, public subsidies may enhance educational attainment by enabling students to study full-time and to work fewer hours or not at all. **Indicator B5** examines public subsidies to households for student living costs and for educational expenses.

How funds are apportioned between categories of expenditure can influence the quality of instruction (through the relative expenditure on teachers' salaries, for example), the condition of educational facilities (through expenditure on school maintenance) and the ability of the education system to adjust to changing demographic and enrolment trends. Comparisons of how countries apportion educational expenditure between the various resource categories can provide some insight into variation in the organisational structure and the operation of educational institutions. Decisions on the allocation of resources made at the system level, both budgetary and structural, eventually feed through to the classroom and affect the nature of teaching and the conditions under which it is provided. The nature of expenditure, in particular the proportion of current expenditure devoted to the compensation of staff (including both salary and non-salary compensation), is examined in **Indicator B6**.

Educational institutions offer a range of educational services besides instruction. At the primary and secondary levels of education, institutions may offer meals, free transport to and from school or boarding facilities. At the tertiary level, institutions may offer housing and often perform a wide range of research activities. Indicator B6 also examines how funds are allocated to these educational functions.

CLASSIFICATION OF EXPENDITURE

The OECD indicators framework classifies educational expenditure in three dimensions:

- The first dimension – represented by the horizontal axis in the diagram below – relates to the location where spending occurs. Spending on schools and universities, education ministries and other agencies directly involved in providing and supporting education is one component of this dimension. Spending on education outside these institutions is another.

- The second dimension – represented by the vertical axis in the diagram below – classifies the goods and services that are purchased. Not all expenditure on educational institutions can be classified as direct educational or instructional expenditure. Educational institutions in many countries not only offer teaching services but also various ancillary services to support students and their families, such as meals, transport, housing, etc. In addition, at the tertiary level spending on research and development can be significant. Not all spending on educational goods and services occurs within educational institutions. For example, families may purchase textbooks and materials themselves or seek private tutoring for their children.
- The third dimension – represented by the colours in the diagram below – distinguishes between the sources from which the funds originate. These include the public sector and international agencies (indicated by the light grey colour) and households and other private entities (indicated by the blue colour). Where private expenditure on education is subsidised by public funds, this is indicated by cells in dark grey colour. The diagram is reported at the beginning of each indicator to signal its coverage.

	Spending on educational institutions (*E.g.*, schools, universities, educational administration and student welfare services)	**Spending on education outside educational institutions** (*E.g.*, private purchases of educational goods and services, including private tutoring)
Spending on instruction	*E.g.*, public spending on educational services in educational institutions	*E.g.*, subsidised private spending on books
	E.g., subsidised private spending on instructional services in institutions	*E.g.*, private spending on books and other school materials or private tutoring
	E.g., private spending on tuition fees	
Spending on research and development	*E.g.*, public spending on university research	
	E.g., funds from private industry for research and development in educational institutions	
Spending on educational services other than instruction	*E.g.*, public spending on ancillary services such as meals, transport to schools, or housing on the campus	*E.g.*, subsidised private spending on student living costs or reduced prices for transport
	E.g., private spending on fees for ancillary services	*E.g.*, private spending on student living costs or transport

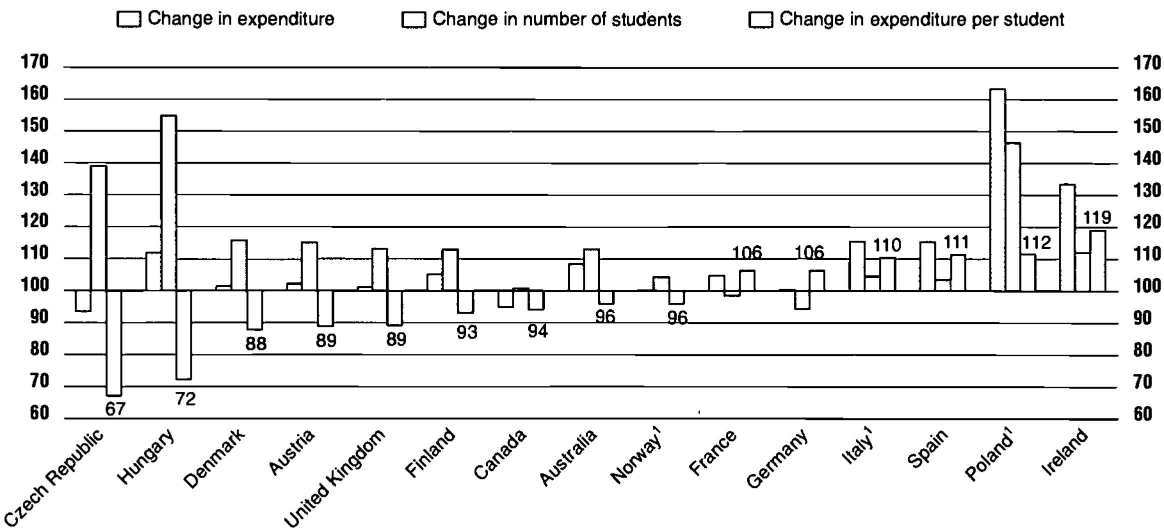
EDUCATIONAL EXPENDITURE PER STUDENT

B1

- As a whole, OECD countries spend US$3 915 per primary student, US$5 625 per secondary student and US$11 720 per tertiary student. However, these averages mask a broad range of expenditure per student across countries. For example, expenditure per secondary student varies between countries by a factor of 6.5.
- OECD countries spend an average of 19 per cent of GDP per capita per primary student, 26 per cent per secondary student and 44 per cent per tertiary student.
- Comparing expenditure per student with student achievement shows that lower unit expenditure cannot automatically be equated with lower student performance.
- Expenditure per primary and secondary student increased by over 10 per cent in Australia, Denmark, Ireland, Italy, Spain and Poland between 1995 and 1998. By contrast, spending on tertiary education has often not kept pace with the rapid expansion of enrolments.
- Moderate annual expenditure per tertiary student can translate into high overall costs of tertiary education where the duration of tertiary studies is relatively long, as is the case in Austria, Finland, Germany and Italy.

Chart B1.1. **Changes in expenditure per student and underlying factors, tertiary education (1998)**

Index of change in expenditure on educational institutions, enrolment and expenditure per student between 1995 and 1998, in public and private institutions (1995 = 100)



1. Public institutions only.

Countries are ranked in ascending order of the change in expenditure per student.

Source: OECD.

POLICY CONTEXT

This indicator shows annual and cumulative expenditure per student in absolute terms...

Effective schools require the right combination of trained and talented personnel, adequate facilities, state-of-the-art equipment and motivated students ready to learn. The demand for high-quality education, which can translate into higher costs per student, needs to be balanced against placing undue burdens on taxpayers.

... and relative to **GDP** *per capita.*

As a result, the question of whether the resources devoted to education yield adequate returns to the investment made figures prominently in the public debate. Although the optimal volume of resources required to prepare each student for life and work in the modern economy is difficult to assess, international comparisons of spending per student can provide a starting point for evaluating the effectiveness of different models of educational provision.

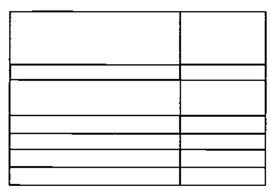
It also compares trends in the development of expenditure per student.

Policy-makers must also balance the importance of improving the quality of educational services with the desirability of expanding access to educational opportunities. A comparative review of how trends in expenditure per student have evolved shows how the expansion of enrolments in many countries, particularly in tertiary education, has been paralleled by changes in educational investment.

Finally, decisions on the allocation of funds to the various levels of education are also important. For example, some countries emphasise broad access to higher education while others invest in near-universal education for children as young as three or four years of age.

EVIDENCE AND EXPLANATIONS

What this indicator covers and what it does not cover



Coverage diagram (see page 55 for explanations)

The indicator shows direct public and private expenditure on educational institutions in relation to the number of full-time equivalent students enrolled in these institutions.

Public subsidies for students' living expenses have been excluded to ensure international comparability of the data. Expenditure data for students in private educational institutions are not available for certain countries, and some other countries do not report complete data on independent private institutions. Where this is the case, only the expenditure on public and government-dependent private institutions has been taken into account. Note that variation in expenditure per student may reflect not only variation in the material resources provided to students (*e.g.*, variations in the ratio of students to teaching staff) but also variation in relative wage levels.

While educational expenditure is dominated below the tertiary level by spending on instructional services, at the tertiary level, other services, particularly those related to R&D activities, can account for a significant proportion of educational spending. Indicator B6 provides further information on how spending is distributed by different types of services provided.

Expenditure per student in equivalent US dollars

As a whole, OECD countries spend US$3 915 per primary student, US$5 625 per secondary student and US$11 720 per tertiary student...

OECD countries as a whole spend US$3 915 per student at the primary level, US$5 625 per student at the secondary level, and US$11 720 per student at the tertiary level (Chart B1.2). But these averages are heavily influenced by high expenditure in a few large countries, most notably the United States. Spending per student in the "typical" OECD country, as represented by the simple mean across all countries, amounts to US$3 940 at the primary level, US$5 294 at the secondary level and US$9 063 at the tertiary level of education (Table B1.1).

... but these averages mask a broad range of expenditure across countries.

These averages mask a broad range of expenditure per student across OECD countries. At the primary level, expenditure ranges from US$863 in Mexico to US$6 713 in Denmark. Differences between countries are even greater at the secondary level, where spending per student varies by a factor of 6.5, from US$1 438 in Poland to US$9 348 in Switzerland. Expenditure per tertiary student ranges from US$3 800 in Mexico to US$19 802 in the United States (Table B1.1).

These comparisons are based on purchasing power parities, not market exchange rates, and therefore reflect the amount of a national currency that will buy the same basket of goods and services in a given country as that bought by the US dollar in the United States.

The labour intensiveness of education accounts for the predominance of teachers' salaries in overall costs.

The labour intensiveness of the traditional model of education accounts for the predominance of teachers' salaries in overall costs. Differences in the ratio of students to teaching staff (indicator D5), in staffing patterns (indicator D2), in teachers' salaries (indicator D1) and in teaching materials and facilities influence the differences in cost between levels of education, types of programme and types of school.

Technology may allow some savings to be made.

Future gains in efficiency may be achieved through the use of new information technologies, both to hold down unit costs and to improve learning outcomes. Unit cost savings may also be available through the expansion of distance education, whether intensive use is made of technology or not.

Lower unit expenditure cannot simply be equated with lower student performance.

It would be misleading to equate lower unit expenditure generally with lower quality of educational services. Japan, Korea and the Netherlands, for example, which have comparatively moderate expenditure per student, are among the countries with the highest levels of performance by 8th-grade students in mathematics (see indicator F1).

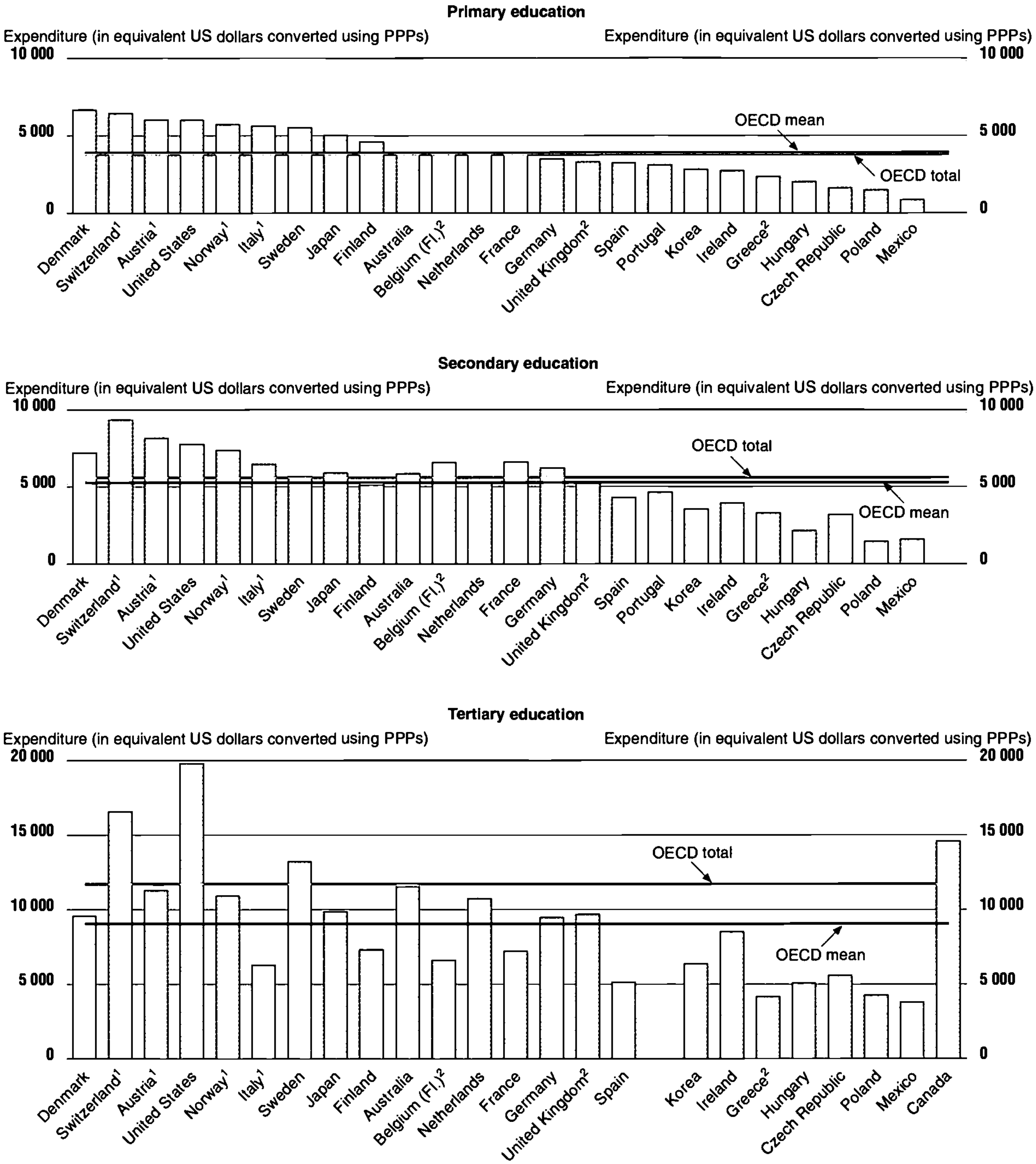
Changes in expenditure per student between 1995 and 1998

Expenditure per primary and secondary student increased by over 10 per cent in Australia, Denmark, Ireland, Italy, Spain and Poland.

In absolute terms and at 1998 constant prices, expenditure per primary and secondary student increased between 1995 and 1998 by over 10 per cent in Australia, Denmark, Ireland, Italy, Spain and Poland. On the other hand, the Czech Republic saw a decline in expenditure per primary and secondary student by over 10 per cent. In other countries, changes remained within plus or minus 5 per cent compared with 1995 (Chart B1.3).

Chart B1.2. **Expenditure per student (1998)**

Annual expenditure per student (in equivalent US dollars converted using PPPs) on public and private institutions, by level of education, based on full-time equivalents



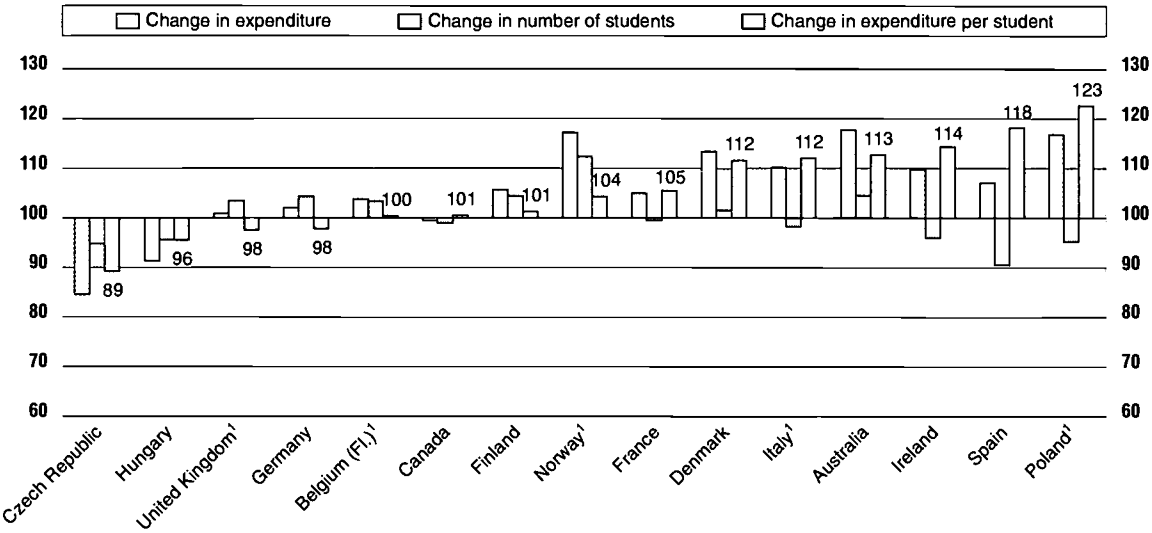
1. Public institutions only.
2. Public and government-dependent private institutions only.

Countries are ranked in descending order of expenditure per student at the primary level of education.

Source: OECD. Table B1.1.

Chart B1.3. **Change in expenditure per student and underlying factors, primary and secondary education (1998)**

Index of change in expenditure on educational institutions, enrolment and expenditure per student between 1995 and 1998, in public and private institutions (1995 = 100)



1. Public institutions only.

Countries are ranked in ascending order of the change in expenditure per student.

Source: OECD.

Changes in enrolments have not been the major factor driving changes in expenditure per primary and secondary student.

Although institutional arrangements often adapt to changing demographic conditions only after a considerable time lag, changes in enrolments do not seem to have been the main factor driving changes in expenditure per primary and secondary student. The exception to this pattern is Spain, where a 10 per cent drop in enrolment has led to a significant increase in spending per student.

In Norway, the country with the highest increase in the number of primary and secondary students between 1995 and 1998, increases in overall expenditure have still kept pace with rising enrolments. The parallel increase in both student numbers and expenditure in Norway is due to the expansion of primary education from six to seven years, implemented in the school year 1997-98. In Ireland and Poland, a significant increase in education budgets has, coupled with a slight decrease in enrolments, led to an increase in spending per primary and secondary student of about 14 and 23 per cent respectively.

At the tertiary level, spending on education has not always kept pace with the rapid expansion of enrolments.

The pattern is different at the tertiary level of education. In five out of 15 OECD countries – Austria, the Czech Republic, Denmark, Hungary and the United Kingdom – tertiary expenditure per student declined between 1995 and 1998 by more than 10 per cent. In all of these countries, this was mainly the result of the rapid increase in the number of tertiary students of more than 10 per cent during the same period (Chart B1.1). On the other hand, expenditure per tertiary student rose significantly in Ireland and Poland despite a growth in enrolment of 12 and 46 per cent respectively. All other countries with increases in expenditure per tertiary student of more than 5 per cent saw little or no change in enrolments. Germany was the only country in which the number of tertiary students actually declined.

Educational expenditure per student in relation to national GDP

OECD countries spend an average of 19 per cent of GDP per capita per primary student, 25 per cent per secondary student and 44 per cent per tertiary student.

Expenditure per student relative to GDP per capita is a spending measure that takes countries' relative wealth into account. Since education is universal at lower levels, spending per student relative to GDP per capita at the lower levels of education can be interpreted as the resources spent on young people relative to a country's ability to pay. At higher levels of education, this measure is affected by a combination of wealth, spending and enrolment rates.

At the tertiary level, for example, countries can be relatively high on this measure if a relatively large proportion of their wealth is spent on educating a relatively small number of students. For the OECD as a whole, expenditure per student averages 19 per cent of GDP per capita at the primary level, 25 per cent at the secondary level and 44 per cent at the tertiary level (Table B1.2).

Poorer countries tend to spend relatively little per student...

There is a clear positive relationship between spending per student and GDP per capita (Chart B1.4), showing that poorer countries tend to spend less per student than richer countries. This trend can also be observed when looking at spending as a percentage of GDP par capita (Table B1.2).

... but there are many exceptions.

Although the relationship between spending per student and GDP per capita is generally positive, there is considerable variation in spending per student among both richer and poorer countries. Austria and Australia for example, are countries with similar levels of GDP per capita which spend very different proportions of their GDP per capita per student. The proportion of national income spent per primary student by Australia, 16 per cent of GDP per capita, is below the OECD average. By contrast, Austria spends 26 per cent of GDP per capita per primary student, which is one of the highest proportions (Table B1.2).

Differences in educational expenditure per student between levels of education

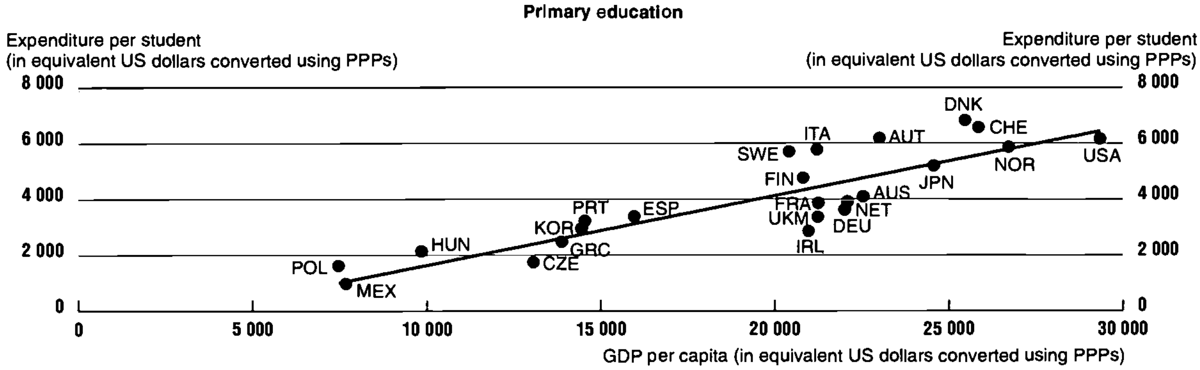
Expenditure per student consistently rises sharply with the level of education...

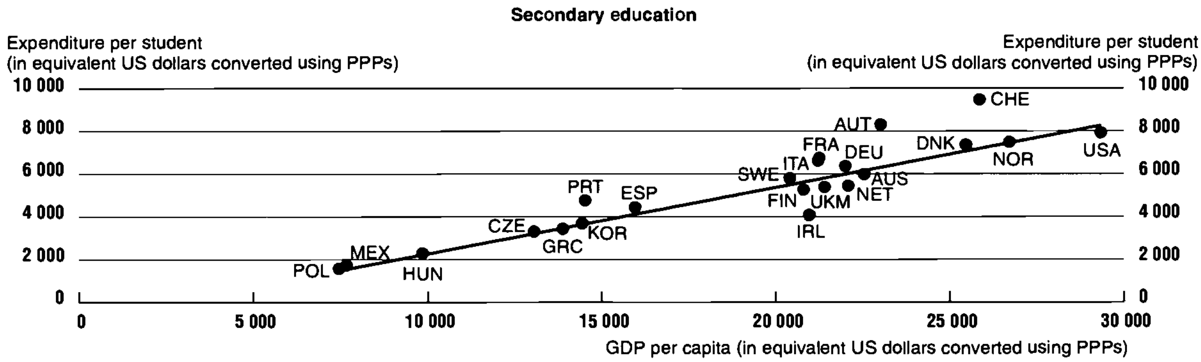
Expenditure per student exhibits a common pattern throughout the OECD: in each country it rises sharply from primary to tertiary education. This pattern can be understood by looking at the main determinants of expenditure, particularly the location and mode of educational provision. The vast majority of education still takes place in traditional school and university settings with – despite some differences – similar organisation, curriculum, teaching style and management. These shared features are likely to lead to similar patterns of unit expenditure.

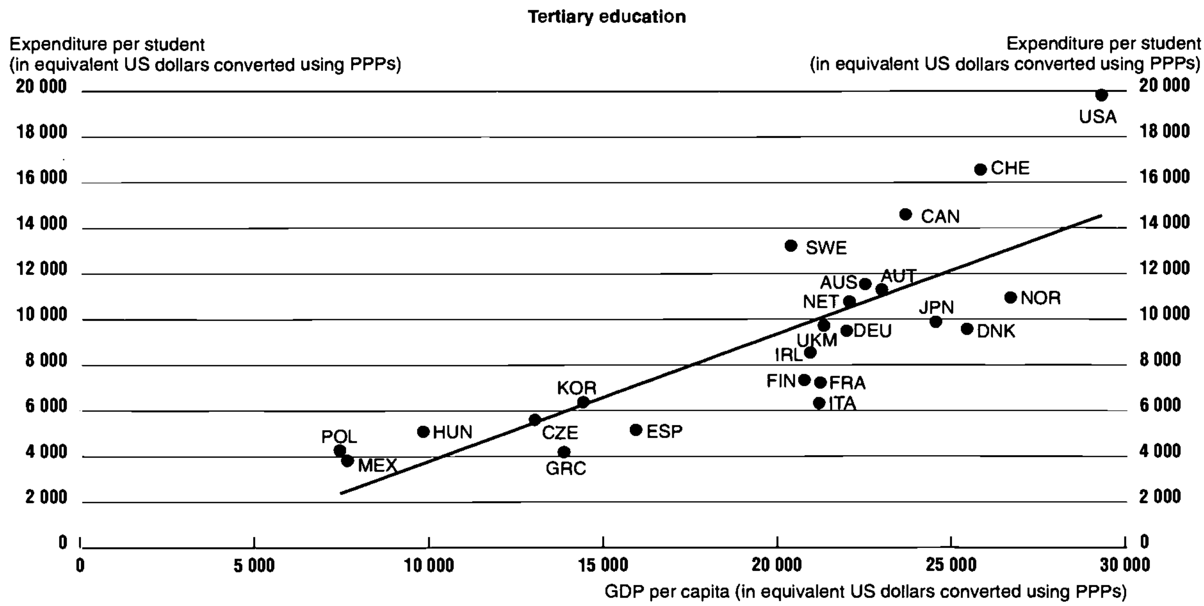
Comparisons of the distribution of expenditure between levels of education are an indication of the relative emphasis placed on education at different levels in various countries, as well as of the relative costs of providing education at those levels. Although expenditure per student rises with the level of education in almost all countries, the relative sizes of the differences vary markedly between countries (Chart B1.5). At the secondary

Chart B1.4. **Expenditure per student in relation to GDP per capita (1998)**

Annual expenditure per student versus GDP per capita (in equivalent US dollars converted using PPPs), by level of education, in public and private institutions



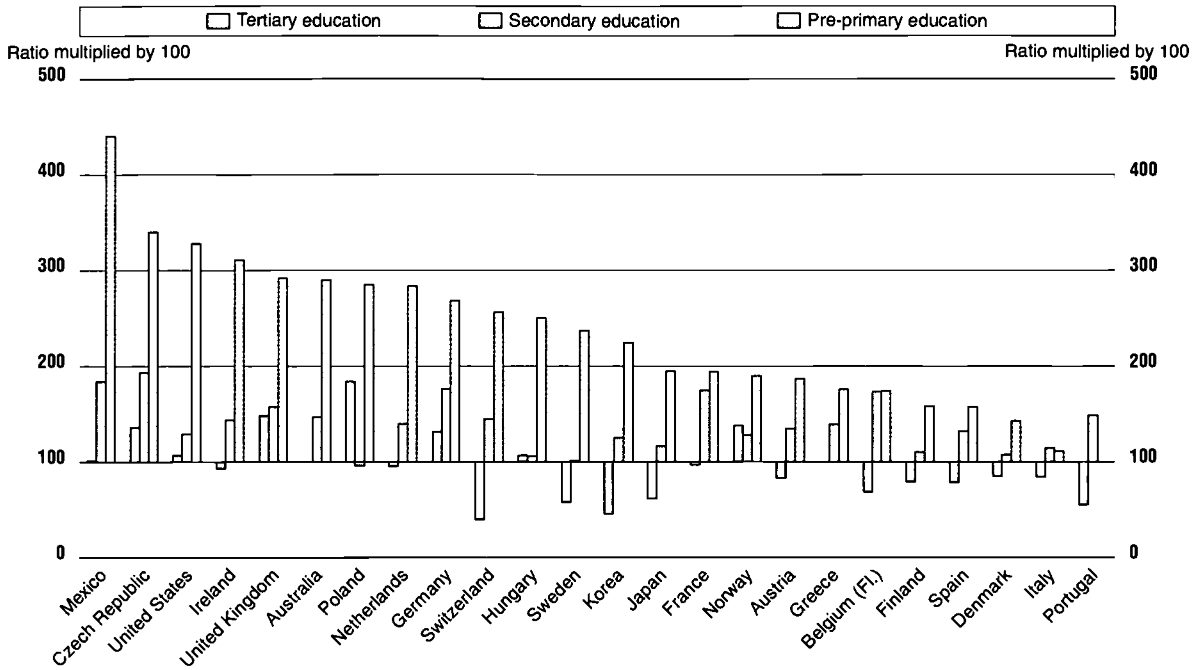




Source: OECD. Table B1.1, Annex 2.

Chart B1.5. **Differences in expenditure per student across levels of education (1998)**

Ratio of educational expenditure per student (in equivalent US dollars converted using PPPs), at various levels of education to educational expenditure per student at the primary level, multiplied by 100, in public and private institutions



A ratio of 500 for tertiary education means that expenditure per tertiary student in a particular country is five times the expenditure per primary student. A ratio of 50 for pre-primary education means that expenditure per pre-primary student in a particular country is half the expenditure per primary student.

Countries are ranked in descending order of expenditure per student in tertiary education relative to educational expenditure per student at the primary level.

Source: OECD.

level, expenditure per student is, on average, 1.3 times that at the primary level, although the difference ranges from 1.0 times the expenditure per primary student in Poland and Sweden to more than 1.7 times in the Czech Republic, France, Germany and Mexico.

On average, OECD countries spend 2.4 times more per student at the tertiary level than at the primary level.

Although OECD countries spend, on average, 2.4 times more per student at the tertiary level than at the primary level, spending patterns vary widely between countries. For example, whereas Italy only spends 1.1 times as much on a tertiary student as on a primary student, Mexico spends 4.4 times as much (Chart B1.5).

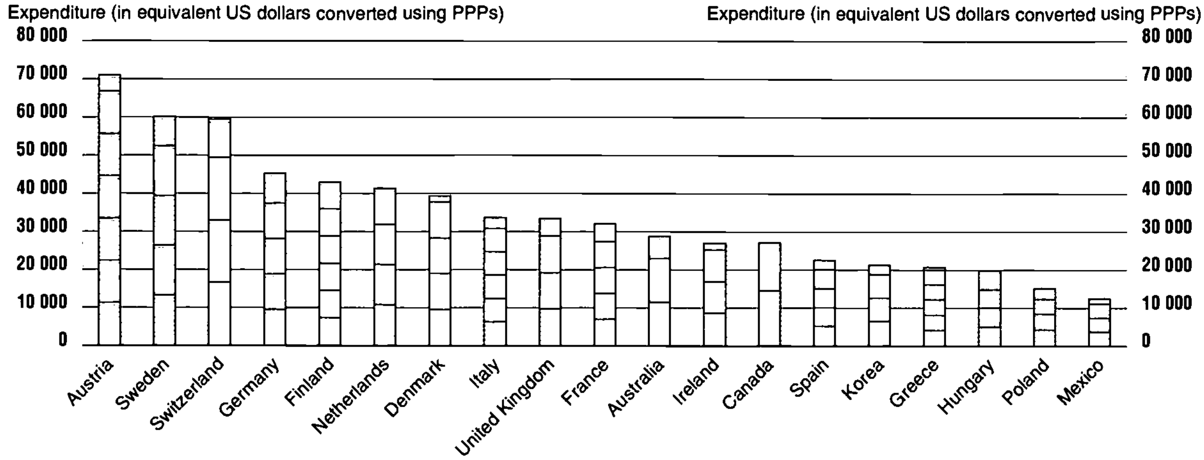
Educational expenditure per student over the average duration of tertiary studies

Annual expenditure per student does not always reflect the full cost of tertiary studies.

Since both the typical duration and the intensity of tertiary education vary between countries, the differences between countries in annual expenditure per student on educational services as shown in Chart B1.2 do not accurately reflect the variation in the total cost of educating the typical tertiary student.

Chart B1.6. Cumulative expenditure per student over the average duration of tertiary studies (1998)

Annual expenditure per student (in equivalent US dollars converted using PPPs) multiplied by the average duration of studies, in public and private institutions



Note: Each segment of the bars represents the annual expenditure per student. The number of segments represents the number of years a students stays on average in tertiary education.

Countries are ranked in descending order of the total expenditure per student over the average duration of tertiary studies.

Source: OECD. Table B1.4.

Students can choose from a range of institutions and enrolment options.

Today, students can choose from a range of institutions and enrolment options in order to find the best fit between their degree objectives, abilities, personal interests and social and economic circumstances. Many students enrol on a part-time basis while others work while studying, or attend more than one institution before graduating. These varying enrolment patterns can affect the interpretability of expenditure per student.

Low annual expenditure may translate into high overall costs of tertiary education if the duration of tertiary studies is relatively long.

In particular, comparatively low annual expenditure per student can result in comparatively high overall costs of tertiary education if the typical duration of tertiary studies is relatively long. Chart B1.6 shows the average expenditure that is incurred per student throughout the course of tertiary studies. The figures account for all students for whom expenditure is incurred, including those who do not finish their studies. Although the calculations are based on a number of simplifying assumptions and therefore should be treated with some caution (see Annex 3), some striking shifts in the rank order of countries between the annual and aggregate expenditure can be noted.

For example, annual spending per tertiary student in the Netherlands is about the same as in Austria (US$10 757 in the Netherlands compared with US$11 279 in Austria) (Table B1.1). But because of differences in the tertiary degree structure (indicator C4), the average duration of tertiary studies is more than one third longer in Austria than in the Netherlands (6.4 years in Austria, compared with 3.9 years in the Netherlands). As a consequence, the cumulative expenditure for each tertiary student is more than 50 per cent higher in Austria than in the Netherlands (US$72 184 compared with US$41 951) (Chart and Table B1.6).

The total cost of tertiary-type A studies in Switzerland (US$94 388) is more than twice as high as in all other ten reporting OECD countries, with the exception of Germany (Table B1.4). These differences must, of course, be interpreted in the light of differences in national degree structures as well as possible differences between countries in the academic level of the qualifications of students leaving university. While similar trends are observed in tertiary-type B studies, the total cost of these studies tends to be much lower than those of tertiary type-A programmes, largely because of their shorter duration.

The total cost of tertiary Type-B studies tends to be much lower than those of tertiary type-A programmes, largely due to the shorter duration.

DEFINITIONS AND METHODOLOGIES

Expenditure per student on a particular level of education is calculated by dividing the total expenditure on educational institutions at that level by the corresponding full-time equivalent enrolment. Only those educational institutions and programmes are taken into account for which both enrolment and expenditure data are available. Expenditure in national currency is converted into equivalent US dollars by dividing the national currency figure by the purchasing power parity (PPP) index. The PPP exchange rate gives the amount of a national currency that will buy the same basket of goods and services in a given country as that bought by the US dollar in the United States. The PPP exchange rate is used because the market exchange rate is affected by many factors (interest rates, trade policies, expectations of economic growth, etc.) that have little to do with current relative domestic purchasing power in different countries (Annex 2 gives further details.)

Data refer to the financial year 1998 and are based on the UOE data collection on educational statistics administered in 2000 (for details see Annex 3).

Tables B1.3 and Charts B1.1 and B1.3 show expenditure per student in the financial year 1995. The data on expenditure for 1995 were obtained by a special survey conducted in 2000. Countries were asked to collect the 1995 data according to the definitions and the coverage of the UOE 2000 data collection. All expenditure data, as well as the GDP for 1995, are adjusted to 1998 prices using the GDP price deflator.

Data for the financial year 1995 are based on a special survey carried out among OECD countries in 2000.

The country mean is calculated as the simple average over all OECD countries for which data are available. The OECD total reflects the value of the indicator if the OECD region is considered as a whole (see Reader's Guide for details).

Expenditure per student relative to GDP per capita is calculated by expressing expenditure per student in units of national currency as a percentage of GDP per capita, also in national currency. In cases where the educational expenditure data and the GDP data pertain to different reference periods, the expenditure data are adjusted to the same reference period as the GDP data, using inflation rates for the country in question (see Annex 2).

Expected expenditure over the average duration of tertiary studies (Table B1.4) is calculated by multiplying current annual expenditure by the typical duration of tertiary studies. The methodology used for the estimation of the typical duration of tertiary studies is described in Annex 3. For the estimation of the duration of tertiary education, data are based on a special survey carried out among OECD countries in 1997 and 2000.

The ranking of countries by annual expenditure per student on educational services is affected by differences in how countries define full-time, part-time and full-time equivalent enrolment. Some countries count every participant at the tertiary level as a full-time student while others determine a student's intensity of participation by the credits which he or she obtains for successful completion of specific course units during a specified reference period. Countries that can accurately account for part-time enrolment will have higher expenditure per full-time equivalent student than countries that cannot differentiate between different modes of student attendance.

Table B1.1. Expenditure per student (1998)

Expenditure per student in US dollars converted using PPPs on public and private institutions, by level of education, based on full-time equivalents

	Pre-primary	Primary	Lower secondary	Upper secondary	All secondary	Post-secondary non-tertiary	Tertiary: All	Tertiary: Tertiary-type B	Tertiary: Tertiary-type A and advanced research programmes
	1	2	3	4	5	6	7	8	9
OECD countries									
Australia[*]	m	3 981	5 184	6 830	5 830	7 218	11 539	8 341	12 279
Austria[1]	5 029	6 065	7 669	8 783	8 163	7 245	11 279	x(7)	x(7)
Belgium[2]	2 726	3 743	x(5)	x(5)	5 970	x(5)	6 508	x(7)	x(7)
Belgium (Fl.)[2]	2 601	3 799	x(5)	x(5)	6 238	x(5)	6 597	x(7)	x(7)
Canada	4 535	m	m	m	m	5 735	14 579	13 795	14 899
Czech Republic	2 231	1 645	2 879	3 575	3 182	1 334	5 584	3 191	6 326
Denmark	5 664	6 713	6 617	7 705	7 200	6 826	9 562	x(7)	x(7)
Finland	3 665	4 641	4 616	5 515	5 111	x(5)	7 327	5 776	7 582
France	3 609	3 752	6 133	7 191	6 605	m	7 226	7 636	7 113
Germany	4 648	3 531	4 641	9 519	6 209	10 924	9 481	5 422	10 139
Greece[2]	x(2)	2 368	x(5)	x(5)	3 287	2 773	4 157	3 232	4 521
Hungary	2 160	2 028	1 906	2 383	2 140	2 304	5 073	a	5 080
Iceland[1]	m	m	m	m	m	m	m	m	m
Ireland	2 555	2 745	x(5)	x(5)	3 934	4 361	8 522	x(7)	x(7)
Italy[1]	4 730	5 653	6 627	6 340	6 458	x(5)	6 295	6 283	6 295
Japan	3 123	5 075	5 515	6 257	5 890	x(5)	9 871	7 270	10 374
Korea	1 287	2 838	3 374	3 692	3 544	a	6 356	4 185	7 820
Luxembourg	m	m	m	m	m	m	m	m	m
Mexico	865	863	1 268	2 253	1 586	a	3 800	x(7)	3 800
Netherlands	3 630	3 795	5 459	5 120	5 304	x(5,7)	10 757	7 592	10 796
New Zealand	m	m	m	m	m	m	m	m	m
Norway[1]	7 924	5 761	7 116	7 839	7 343	x(5)	10 918	x(9)	10 918
Poland	2 747	1 496	x(2)	1 438	1 438	m	4 262	x(9)	4 262
Portugal	1 717	3 121	4 219	5 137	4 636	a	m	m	m
Spain	2 586	3 267	x(5)	x(5)	4 274	x(5)	5 038	4 767	5 056
Sweden	3 210	5 579	5 567	5 701	5 648	m	13 224	x(7)	x(7)
Switzerland[1]	2 593	6 470	7 618	11 219	9 348	7 621	16 563	10 273	17 310
Turkey[1]	m	m	m	m	m	m	m	m	m
United Kingdom[2*]	4 910	3 329	x(5)	x(5)	5 230	x(5)	9 699	x(7)	x(7)
United States	6 441	6 043	x(5)	x(5)	7 764	x(7)	19 802	x(7)	x(7)
Country mean	**3 585**	**3 940**	**5 083**	**5 916**	**5 294**	**4 404**	**9 063**	~	~
OECD total	**3 883**	**3 915**	~	~	**5 625**	~	**11 720**	~	~
WEI participants									
Argentina[1]	1 662	1 389	1 667	2 229	1 860	n	2 965	4 425	2 572
Brazil[1, 3]	1 065	837	995	1 154	1 076	n	14 618	x	14 618
Chile	1 318	1 500	1 624	1 764	1 713	n	5 897	3 121	6 565
Indonesia[1, 4]	425	116	433	647	497	n	6 840	x	x
Israel	3 094	4 135	x	x	5 115	3 570	10 765	8 413	11 400
Malaysia[1]	385	919	x	x	1 469	5 999	m	m	m
Paraguay[1]	x	572	x	948	948	n	m	2 511	m
Peru	463	479	x	x	671	a	2 085	1 033	3 035
Philippines[1, 3]	433	689	640	1 089	726	3 614	2 799	n	2 799
Thailand	802	1 048	1 091	1 289	1 177	m	6 360	4 971	6 951
Tunisia[1, 4]	239	891	x	x	1 633	n	5 136	5 753	x
Uruguay[1]	1 096	971	1 068	1 480	1 246	n	2 081	x	x
Zimbabwe	m	768	x	x	1 179	x	10 670	5 355	13 521

1. Public institutions only.
2. Public and government-dependent private institutions only.
3. Year of reference 1997.
4. Year of reference 1999.
* See Annex 3 for notes.

Source: OECD.

Table B1.2. **Expenditure per student relative to GDP per capita (1998)**

Ratio of expenditure per student relative to GDP per capita (multiplied by 100) on public and private institutions, by level of education, based on full-time equivalents

	Pre-primary	Primary	Lower secondary	Upper secondary	All secondary	Post-secondary non-tertiary	Tertiary: All	Tertiary: Tertiary-type B	Tertiary: Tertiary-type A and advanced research programmes
	1	2	3	4	5	6	7	8	9
OECD countries									
Australia	m	16	21	28	24	30	48	34	51
Austria[1]	21	26	33	37	35	31	48	x(7)	x(7)
Belgium (Fl.)[2]	11	16	x(5)	x(5)	28	x(5)	27	x(7)	x(7)
Canada	18	m	m	m	m	23	58	55	59
Czech Republic	17	13	22	28	25	10	43	25	49
Denmark	22	26	26	30	28	27	37	x(7)	x(7)
Finland	17	21	21	25	23	x(5)	34	27	35
France	17	18	29	34	31	m	34	36	34
Germany	20	15	20	42	27	48	41	24	44
Greece[2]	x(2)	17	x(5)	x(5)	23	19	29	23	32
Hungary[1]	21	20	18	23	20	24	53	a	53
Iceland	m	m	m	m	m	m	m	m	m
Ireland	11	12	x(5)	x(5)	17	19	38	x(7)	x(7)
Italy[1]	21	26	30	29	29	x(5)	28	28	28
Japan	13	21	23	26	24	x(5,7)	41	30	43
Korea	9	20	23	26	25	a	44	29	54
Luxembourg	m	m	m	m	m	m	m	m	m
Mexico	11	11	16	29	20	a	48	x(7)	48
Netherlands	15	15	22	21	21	x(5,7)	44	31	44
New Zealand	m	m	m	m	m	m	m	m	m
Norway[1]	30	22	27	29	28	x(5)	42	x(9)	42
Poland	34	18	x(2)	18	18	x(5)	52	x(9)	52
Portugal[1]	17	21	28	30	29	a	m	m	m
Spain	15	19	x(5)	x(5)	27	x(5)	30	28	30
Sweden	15	26	25	26	26	m	61	x(7)	x(7)
Switzerland[1]	9	24	28	41	34	28	61	38	63
Turkey[1]	m	m	m	m	m	m	m	m	m
United Kingdom[2*]	23	15	x(5)	x(5)	24	x(5)	45	x(7)	x(7)
United States	20	19	x(5)	x(5)	24	x(7)	61	x(7)	x(7)
Country mean	**18**	**19**	**24**	**29**	**26**	**20**	**44**	**31**	**45**
WEI participants									
Argentina[1]	14	12	14	19	16	n	25	37	22
Brazil[1, 3]	16	12	15	17	16	n	214	x	214
Chile	15	17	19	20	20	n	67	36	75
Indonesia[1, 4]	16	4	16	24	19	n	259	x	x
Israel	18	24	x	x	30	21	62	49	66
Malaysia[1]	5	11	x	x	18	74	m	m	m
Paraguay[1]	x	13	x	x	22	n	m	58	m
Peru	11	11	x	x	15	a	48	24	70
Philippines[1, 3]	12	18	17	29	19	97	75	n	75
Thailand	15	19	20	23	21	m	116	90	126
Tunisia[1, 4]	4	16	x	x	28	n	90	100	x
Uruguay[1]	13	11	12	17	14	n	24	x	x
Zimbabwe	m	29	x	x	44	x	401	201	508

1. Public institutions only.
2. Public and government-dependent private institutions only.
3. Year of reference 1997.
4. Year of reference 1999.
* See Annex 3 for notes.

Source: OECD.

Table B1.3. **Expenditure per student relative to GDP per capita (1995)**

Ratio of expenditure per student relative to GDP per capita (multiplied by 100) on public and private institutions, by level of education, based on full-time equivalents

	Pre-primary	Primary	Lower secondary	Upper secondary	All secondary	Post-secondary non-tertiary	Tertiary: All	Tertiary: Tertiary-type B	Tertiary: Tertiary-type A and advanced research programmes
	1	2	3	4	5	6	7	8	9
Australia	m	15	22	30	25	40	54	40	58
Canada	24	m	m	m	m	21	64	68	63
Belgium (Fl.)	12	16	x(5)	x(5)	28	x(5)	32	x(7)	x(7)
Czech Republic	18	18	19	30	25	19	62	31	64
Denmark	22	25	27	27	27	33	44	x(7)	x(7)
Finland	18	24	23	28	26	m	40	42	40
France	16	17	28	34	31	23	33	38	32
Germany	23	16	22	44	29	53	41	20	45
Greece	n	15	x(5)	x(5)	15	m	22	14	26
Hungary	20	23	22	26	24	m	71	a	71
Ireland	9	13	x(5)	x(5)	20	24	38	x(7)	x(7)
Italy[1]	18	24	28	28	28	13	26	23	26
Mexico	14	13	20	28	23	a	63	x(7)	x(7)
Norway	26	m	m	m	m	m	45	x(9)	45
Poland[1]	35	18	x(5)	x(5)	18	x(5)	59	x(7)	x(7)
Spain	17	19	16	31	25	x(5)	29	32	29
United Kingdom[2*]	29	16	x(5)	x(5)	26	x(5)	49	x(7)	x(7)

1. Public institutions only.
2. Public and government-dependent private institutions only.
* See Annex 3 for notes.
Source: OECD.

B1

Table B1.4. **Cumulative expenditure per student over the average duration of tertiary studies (1998)**

Average duration of tertiary studies and expenditure over the average duration of studies in US dollars converted using PPPs, by type of programme

	Method[1]	Average duration of tertiary studies (in years)			Cumulative expenditure per student over the average duration of tertiary studies		
		All	Tertiary-type B	Tertiary-type A and advanced research programmes	All	Tertiary-type B	Tertiary-type A and advanced research programmes
Australia	CM	2.5	1.6	2.6	29 194	13 095	31 433
Austria[4]	AF	6.4	2.3	7.4	72 184	x	x
Canada[4*]	CM	1.9	1.4	2.5	27 419	19 100	37 447
Denmark[4]	AF	4.2	2.1	4.4	40 065	x	x
Finland	CM	6.0	a	6.0	45 413	a	45 413
France[4]	AF	4.7	2.8	5.3	33 830	21 135	37 741
Germany[*]	CM	4.9	2.4	6.0	46 078	13 230	60 938
Greece[3*]	AF	5.2	3.0	7.3	21 657	9 792	33 046
Hungary	CM	4.1	a	4.1	20 545	a	20 572
Iceland[2*]	CM	2.7	2.0	2.8	m	m	m
Ireland[*]	CM	3.2	2.2	4.0	27 610	x	x
Italy[2]	CM	5.5	3.3	5.6	34 559	20 547	35 063
Korea[4*]	CM	3.4	2.1	4.2	21 800	8 662	33 002
Mexico[4]	AF	3.4	x	3.4	13 005	x	x
Netherlands[4]	CM	3.9	x	x	41 951	x	x
Poland[*]	CM	3.7	a	3.7	15 685	a	15 685
Spain[4]	AF	4.6	1.5	4.7	22 922	7 098	23 795
Sweden	CM	4.6	2.6	4.7	60 928	x	x
Switzerland[4*]	CM	3.6	2.2	5.5	60 030	22 466	94 388
United Kingdom[3*]	CM	3.5	x	x	34 348	x	x
Country mean		**4.1**	**2.0**	**4.7**	**35 087**	~	~

1. Either the Chain Method (CM) or an Approximation Formula (AF) was used to estimate the duration of tertiary studies.
2. Public institutions only.
3. Public and government-dependent private institutions only.
4. The duration of tertiary studies is obtained by a special survey conducted in 1997 for the academic year 1995. Programmes were classified according to ISCED-76.

* See Annex 3 for notes.

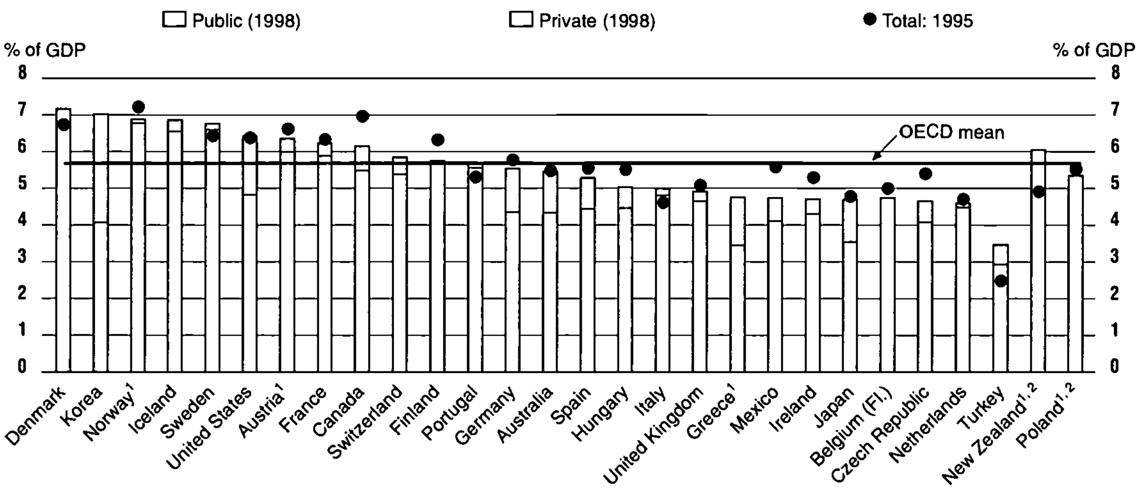
Source: OECD.

EXPENDITURE ON EDUCATIONAL INSTITUTIONS RELATIVE TO GROSS DOMESTIC PRODUCT

- All OECD countries invest a substantial proportion of national resources in education. In 1998 OECD countries as a whole spent 5.7 per cent of their collective GDP on their educational institutions.
- In 11 out of 17 OECD countries, public and private investment in education increased between 1995 and 1998 by more than 5 per cent but, in contrast to the early 1990s, increases in spending on education tended to fall behind the growth in national income.
- Countries differ markedly in their investment in pre-primary educational institutions.
- Two thirds of expenditure on educational institutions, or 3.6 per cent of combined OECD GDP, is devoted to primary, secondary and post-secondary non-tertiary education, although Korea and the United States spend more than 2 per cent of their GDP on tertiary education.

Chart B2.1. Expenditure on educational institutions as a percentage of GDP (1995, 1998)

Direct and indirect expenditure on public and private educational institutions from public and private sources for all levels of education, by source of fund and year



1. Public subsidies included in private funds.
2. Public expenditure only.

Countries are ranked in descending order of total expenditure from both public and private sources on educational institutions.

Source: OECD. Table B2.1*a*.

POLICY CONTEXT

This indicator provides a measure of the relative proportion of a nation's wealth that is invested in educational institutions.

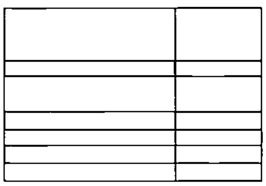
Expenditure on education is an investment that can help to foster economic growth, enhance productivity, contribute to personal and social development, and reduce social inequality. The proportion of total financial resources devoted to education is one of the key choices made in each country; an aggregate choice made by governments, enterprises, and individual students and their families. As long as the social and private returns on that investment are sufficiently large, there is an incentive for enrolment to expand and total investment to increase.

It also includes a comparative review of changes in educational investment over time.

In appraising how much is spent on education, governments have to interpret demands for increased spending in areas such as teachers' salaries and educational facilities. Although this indicator cannot answer these questions directly, it provides a point of reference as to how the volume of educational spending, relative to the size of national wealth and in absolute terms, has evolved over time in various countries.

EVIDENCE AND EXPLANATIONS

What this indicator covers and what it does not cover



Coverage diagram
(see page 55 for explanations)

This indicator covers expenditure on schools, universities and other public and private institutions involved in delivering or supporting educational services. Expenditure on institutions is not limited to expenditure on instructional services but also includes public and private expenditure on ancillary services for students and families, where these services are provided through educational institutions. At the tertiary level, spending on research and development can also be significant and is included in this indicator, to the extent that the research is performed by educational institutions.

Not all spending on educational goods and services occurs within educational institutions. For example, families may purchase textbooks and materials commercially or seek private tutoring for their children outside educational institutions. At the tertiary level, student living costs and forgone earnings can also account for a significant proportion of the costs of education. All such expenditure outside educational institutions is excluded from this indicator, even if is publicly subsidised. Public subsidies for educational expenditure outside institutions are discussed in indicators B4 and B5.

Overall investment relative to GDP

As a whole, OECD countries spend 5.7 per cent of their combined GDP on their educational institutions.

All OECD countries invest a substantial proportion of national resources in education. Taking into account both public and private sources of funds, OECD countries as a whole spend 5.7 per cent of their collective GDP on their educational institutions. Under current conditions of tight constraints on public budgets, such a large spending item is subject to close scrutiny by governments looking for ways to reduce or limit the growth of expenditure.

The highest spending on educational institutions can be observed in Denmark and Korea, with over 7 per cent of GDP accounted for by public and private spending on educational institutions, followed by Iceland, Norway and Sweden with more than 6.7 per cent. One third of OECD countries, however, spend less than 5 per cent of GDP on educational institutions, and in the Czech Republic, the Netherlands and Turkey this figure is only between 3.5 and 4.7 per cent (Chart B2.1 and Table B2.1*a*).

The national resources devoted to education depend on a number of inter-related factors of supply and demand.

Many factors influence the relative position of countries on this indicator. For example, countries with high spending levels may be enrolling larger numbers of students while countries with low spending levels may either be limiting access to higher levels of education or delivering educational services in a particularly efficient manner. The distribution of enrolments between sectors and fields of study may also differ, as may the duration of studies and the scale and organisation of related educational research. Finally, large differences in GDP between countries imply that similar percentages of GDP spent on education can translate into very different absolute amounts per student (see indicator B1).

Changes in overall educational spending between 1995 and 1998

In 11 out of 17 OECD countries, public and private investment in education increased between 1995 and 1998 by more than 5 per cent...

In 11 out of the 17 countries for which comparable trend data are available, public and private investment in education increased by over 5 per cent between 1995 and 1998 in real terms (see Chart B2.2). Increases in expenditure on educational institutions amounted to over 15 per cent in Denmark, Ireland and Portugal, and to over 60 per cent in Turkey. The trend is similar in public investment alone: direct public expenditure on institutions and public subsidies to households designated for institutions rose by over 5 per cent in 16 out of 22 countries between 1995 and 1998. Greece, New Zealand and Poland, for which no data on private spending are available, show considerable growth in public spending on educational institutions.

Italy, which saw significant decreases in public expenditure on educational institutions in the early 1990s, experienced growth in public spending on educational institutions of more than 11 per cent between 1995 and 1998, far more than the growth in its GDP over the same period. On the other hand, expenditure on educational institutions remained unchanged in Austria, Canada, Germany, Hungary and Mexico between 1995 and 1998, and fell in the Czech Republic (Table B2.2).

... but increases in spending on education tended to fall behind the growth in national income.

While spending on educational institutions tended to increase, it should not be overlooked that, with the exception of Denmark, Greece, Italy, Portugal, New Zealand and Turkey, these increases lagged behind growth in GDP over the same period (Chart B2.2).

In the first half of the 1990s, expenditure on education grew faster than national income...

During the first half of the 1990s, spending on educational institutions grew faster than GDP in most OECD countries, leading to an increase in average spending on educational institutions from 5.3 per cent of GDP in 1990 to 5.6 per cent of GDP in 1995. Growth in spending on educational institutions was largely accounted for by public sources (Table B2.1*a*).

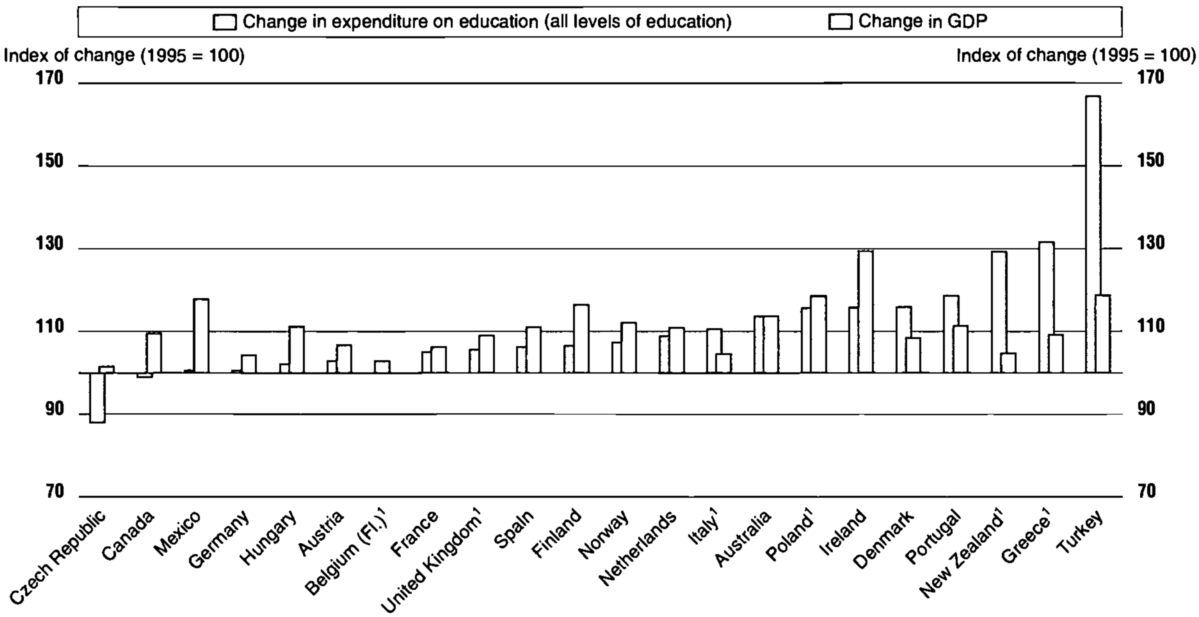
... but the trend began to reverse in the second half of the 1990s.

However, the trend began to reverse in the second half of the 1990s. Although, in absolute terms, spending on educational institutions still increased between 1995 and 1998, it tended to lag behind growth in GDP. Around two thirds of OECD countries show a decrease in the proportion of

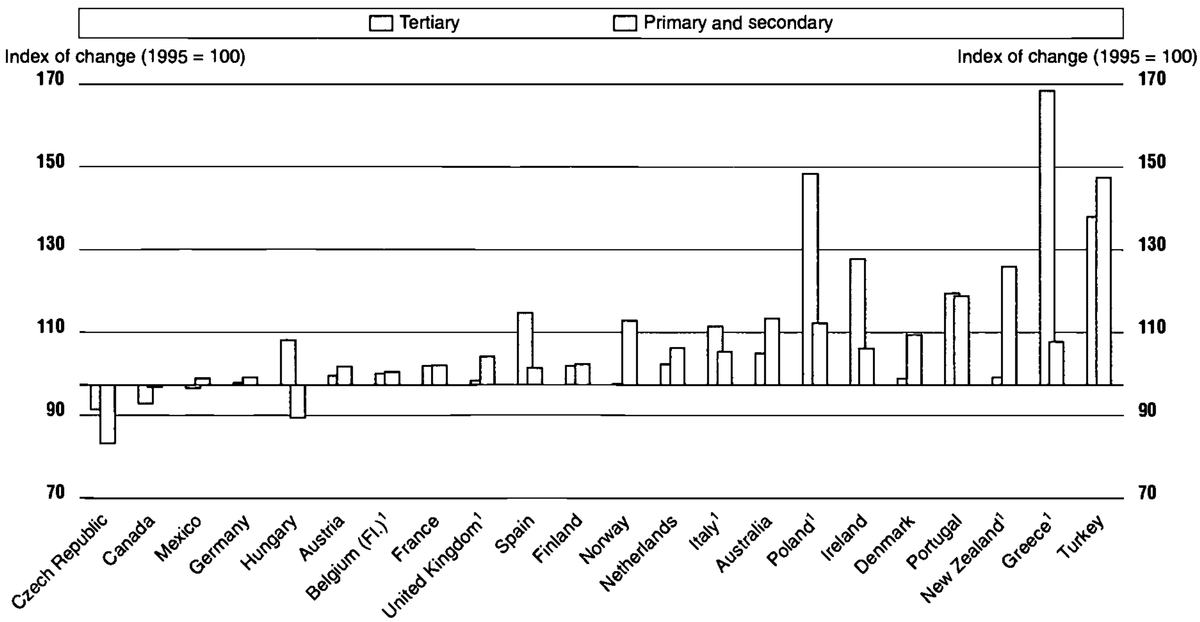
Chart B2.2. **Change in expenditure on educational institutions (1998)**

Index of change between 1995 and 1998 in direct expenditure for public and private educational institutions (1995 = 100)

All levels of education and Gross Domestic Product



Primary and secondary education, and tertiary education



1. Public expenditure only.

Countries are ranked in ascending order of change in expenditure on educational institutions at all levels of education between 1995 and 1998.

Source: OECD. Table B2.2, Annex 2.

GDP devoted to educational institutions. Most notable are Canada, the Czech Republic, Finland, Ireland and Mexico, where the proportion of GDP spent on education decreased by more than 0.5 percentage points.

While the strong growth of GDP in Ireland hides significant increases in spending on educational institutions, education in the Czech Republic and Mexico did not benefit significantly from growth in GDP. Both countries were already among the countries spending the lowest proportion of GDP on education in 1995 and have now fallen further behind (Table B2.1a and Chart B2.1).

Expenditure on educational institutions by level of education

Countries differ markedly in their investment in pre-primary educational institutions.

High overall spending on education does not necessarily translate into a high level of spending at all levels of education. Differences in spending on educational institutions are most striking at the pre-primary level of education. Here, spending ranges from less than 0.2 per cent of GDP in Australia, Ireland and Korea to 0.7 per cent or more in Denmark, France and Hungary (Table B2.1*c*). Differences at the pre-primary level can be explained mainly by participation rates among younger children and differences in the starting age of primary education (see Chart C1.2).

Given the importance of early childhood education and the concern to build a strong foundation for lifelong learning and to ensure equitable access to learning opportunities later in school, investment in early childhood education is of key importance. However, high-quality early childhood education and care are not only provided by the educational institutions covered by this indicator. Inferences on access to and quality of early childhood education and care should therefore be made with caution.

Two thirds of expenditure on institutions is devoted to primary, secondary and post-secondary non-tertiary education.

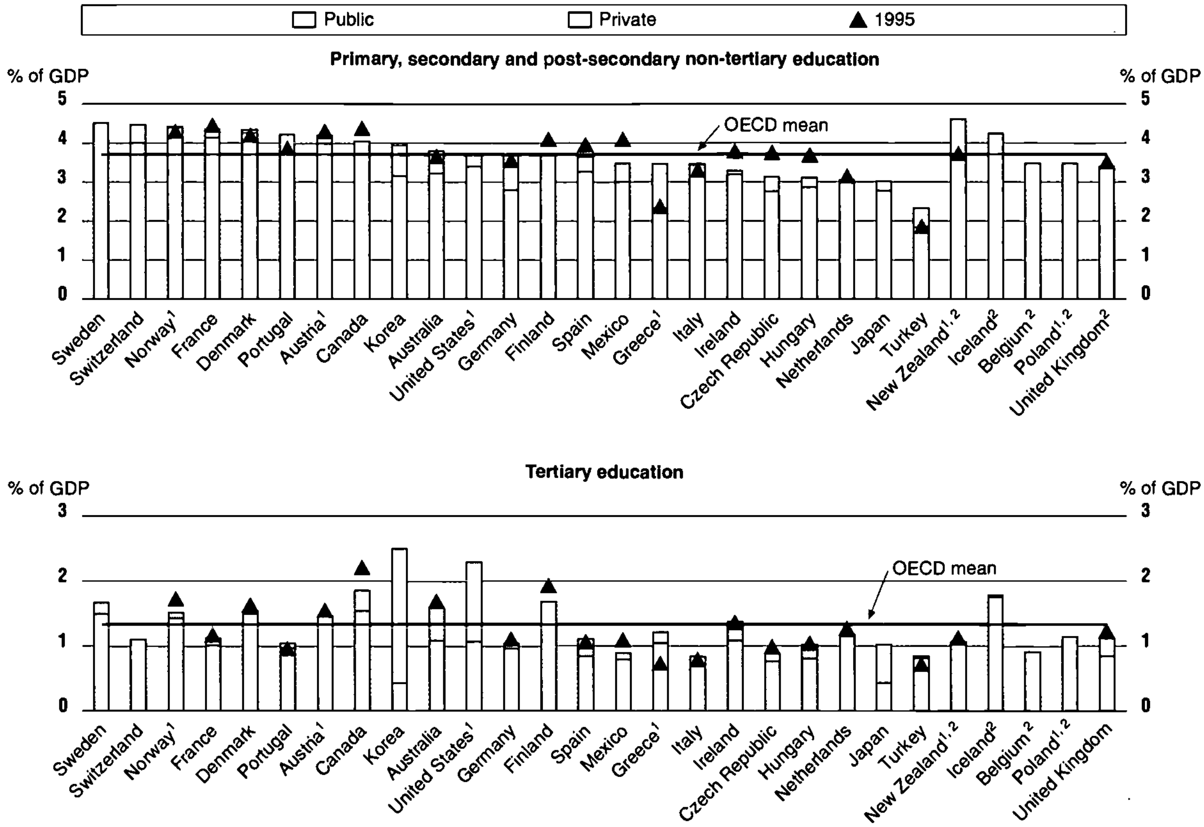
Because of the largely universal enrolment at the primary and lower secondary level of education in OECD countries, and the high participation rates in upper secondary education (see indicators C1 and C2), these levels account for the bulk of expenditure on educational institutions which equals 3.6 per cent of combined OECD GDP (Chart B2.3). At the same time, significantly higher spending per student at the upper secondary and tertiary levels of education causes the overall investment in these levels to be higher than enrolment numbers alone would suggest. More than one quarter of combined OECD expenditure on educational institutions is accounted for by tertiary education.

Korea and the United States spend more than 2 per cent of their GDP on tertiary education.

Korea and the United States spend 2.5 and 2.3 per cent, respectively, of their GDP on tertiary institutions (Chart B2.3). This accounts for more than one third of all their expenditure on educational institutions. Canada, Finland, Iceland and Sweden also show high spending levels, with 1.6 per cent or more of GDP devoted to tertiary institutions. On the other hand, France, Portugal and Switzerland spend a below-average proportion of GDP on tertiary institutions but are among the OECD countries with the highest proportion of GDP spent on primary and secondary education. In Switzerland, nevertheless, a low proportion of GDP on tertiary institutions translates into one of the highest levels of spending per tertiary student, because of a comparatively low tertiary enrolment rate (Table B2.1*c*).

Chart B2.3. **Expenditure on educational institutions as a percentage of GDP (1995, 1998)**

Direct and indirect expenditure on public and private educational institutions from public and private sources, by level of education, source of fund and year



1. Public subsidies included in private funds.
2. Public expenditure only.

Countries are ranked in descending order of total expenditure from both public and private sources on public and private educational institutions in primary, secondary and post-secondary non-tertiary education. Countries presenting public expenditure only are ranked separately.

Source: OECD. Table B2.1*b*.

While some countries have increased spending at all levels of education, others have focused spending increases on specific levels.

Countries vary in the levels of education at which spending levels have increased. Australia, Italy, the Netherlands, Portugal and Turkey, countries with a comparably high increase in absolute spending on educational institutions, invested the additional resources at all levels of education. By contrast, Denmark, New Zealand and Norway increased their spending on primary and secondary education while spending on tertiary education remained at the level of 1995. Conversely, in Ireland, Greece and Poland, spending on tertiary education increased by more than 30 per cent between 1995 and 1998 while spending on lower levels increased much more slowly. In Hungary, a significant increase in spending on tertiary institutions (12 per cent) was matched by a decrease in spending at the primary and secondary level of 9 per cent (Chart B2.2).

Important factors influencing national expenditure on education

The national resources devoted to education depend on a number of inter-related factors of supply and demand, such as the demographic structure of the population, enrolment rates, income per capita, national levels of teachers' salaries and the organisation and delivery of instruction.

The larger the number of young people, the greater the potential demand for educational services.

The size of the population of school age in a particular country (indicator A1) shapes the potential demand for initial education and training. The larger the number of young people, the greater the potential demand for educational services. Among countries of comparable wealth, a country with a relatively large youth population will have to spend a higher percentage of its GDP on education so that each young person in that country has the opportunity to receive the same quantity of education as young people in other countries. Conversely, if the youth population is relatively small, the same country will be required to spend less of its wealth on education in order to achieve similar results (Chart A1.3).

The higher the enrolment rate, the more financial resources will be required.

Although countries generally have little control over the size of their youth populations, the proportion of students participating at various levels of education is indeed a central policy issue. Variations in enrolment rates between countries reflect differences in the demand for education, from pre-primary to tertiary education, as well as the supply of programmes at all levels. Indicator C1 shows that the years that a five-year-old child can expect to spend in education ranges among OECD countries from ten to 20 years. The variation in expected years in tertiary education is even wider, from less than one year in Luxembourg and Mexico to 3.9 years in Finland.

Differences in the length of schooling also influence educational spending.

Differences in the length of schooling are reflected in differences in enrolment rates which, in turn, influence educational expenditure. Chart B2.4 shows the change in expenditure on educational institutions as a percentage of GDP that would be expected if enrolment profiles were equal in all OECD countries and other factors remained the same. Generally, countries that have higher than average enrolment rates, such as Australia, Finland, Norway and Sweden, also spend more of their GDP on education, whereas low expenditure in countries such as the Czech Republic, Hungary and Turkey can be partially explained by below-average enrolment rates. Exceptions to this pattern are Austria and Korea, which have below-average enrolment but high levels of spending.

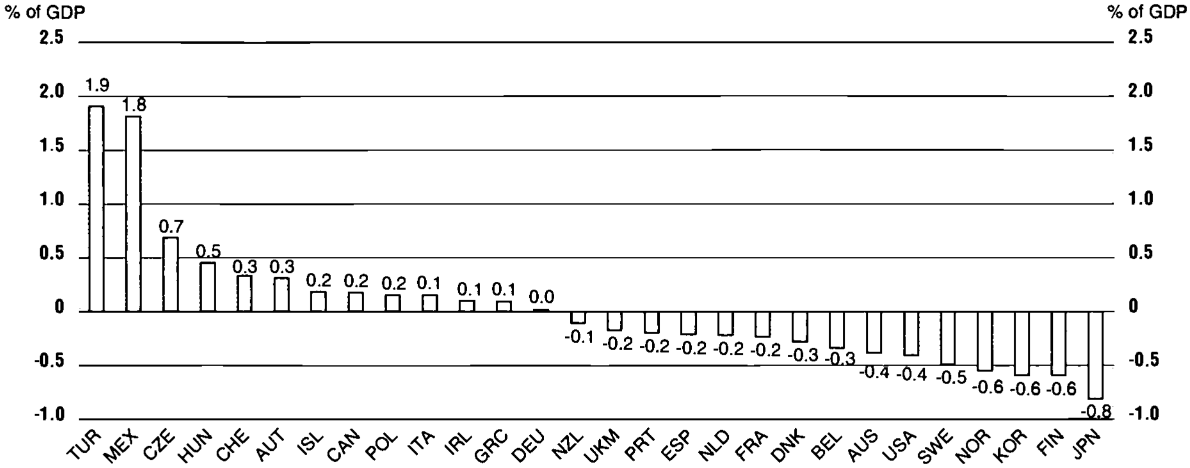
If enrolment patterns were equal in all OECD countries, expenditure as a percentage of GDP would be expected to rise by more than 1.8 per cent of GDP in Mexico and Turkey, and to fall by 0.6 per cent or more in Finland, Japan, Korea and Norway, assuming constant expenditure per student in each of these countries (Chart B2.4).

In some countries, demographic effects on educational spending are outweighed by the effects of enrolment patterns.

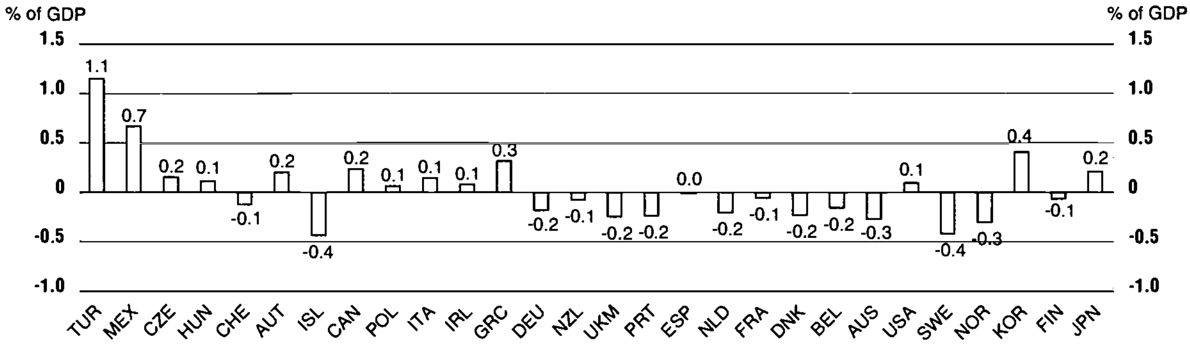
The impact of enrolment rates on educational spending is most clearly visible in tertiary education, where both enrolment rates (see indicator C1) and expenditure per student (indicator B1) differ widely between countries. If tertiary enrolment patterns in Japan and Korea were at the level of the OECD average, expenditure on tertiary institutions as a percentage of GDP would be expected to fall by 1.0 percentage points, while in Finland and the United States this change would be 0.5 percentage points (Chart B2.4). At the other end of the scale are

Chart B2.4. Impact of enrolment rates on expenditure on educational institutions as a percentage of GDP (1998)

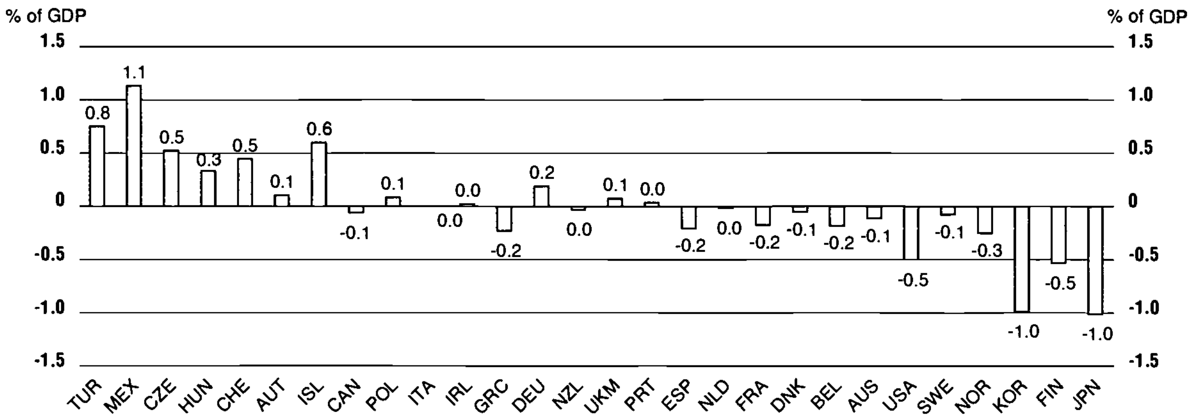
A. Estimated increase/decrease in expenditure on educational institutions as a percentage of GDP if enrolment patterns in each country (all levels of education combined) were at the OECD average



B. Estimated increase/decrease in expenditure on educational institutions as a percentage of GDP if enrolment patterns at the primary and secondary level in each country were at the OECD average



C. Estimated increase/decrease in expenditure on educational institutions as a percentage of GDP if enrolment patterns at the tertiary level in each country were at the OECD average



Countries are ranked in descending order of the estimated increase/decrease in expenditure as a percentage of GDP if enrolment patterns in each country (all levels of education combined) were at the OECD average.

Mexico and Turkey, whose expenditure on tertiary institutions as a percentage of GDP would be expected to increase by 1.1 and 0.8 percentage points, respectively, if enrolment patterns were at the OECD average.

DEFINITIONS AND METHODOLOGIES

Data refer to the financial year **1998** *and are based on the* **UOE** *data collection on educational statistics administered in* **2000** *(for details see* **Annex 3**).

B2

Expenditure on educational institutions, as covered by this indicator, includes expenditure on instructional educational institutions as well as expenditure on non-instructional educational institutions. *Instructional educational institutions* are educational institutions which directly provide instructional programmes (*i.e.*, teaching) to individuals in an organised group setting or through distance education. Business enterprises or other institutions providing short-term courses of training or instruction to individuals on a "one-to-one" basis are not included. *Non-instructional educational institutions* provide administrative, advisory or professional services to other educational institutions, although they do not enrol students themselves. Examples include national, state, and provincial ministries or departments of education; other bodies that administer education at various levels of government or analogous bodies in the private sector; and organisations that provide such education-related services as vocational or psychological counselling, placement, testing, financial aid to students, curriculum development, educational research, building operations and maintenance services, transportation of students, and student meals and housing.

This broad definition of institutions ensures that expenditure on services, which are provided in some countries by schools and universities and in others by agencies other than schools, are covered on a comparable basis.

The distinction by source of funds is based on the initial source of funds and does not reflect subsequent public-to-private or private-to-public transfers. For this reason, subsidies to households and other entities, such as subsidies for tuition fees and other payments to educational institutions, are included in public expenditure in this indicator. Payments from households and other private entities to educational institutions include tuition and other fees, net of offsetting public subsidies. A detailed discussion of public subsidies can be found in indicator B5.

Data for the financial year **1995** *are based on a special survey carried out among* **OECD** *countries in* **2000**.

Tables B2.1*a-b* and B2.2 show expenditure on educational institutions for the financial year 1995. The data on expenditure for 1995 were obtained by a special survey in 2000 in which expenditure for 1995 was adjusted to methods and definitions used in the 1998 UOE data collection.

Data for **1995** *are expressed in* **1998** *price levels.*

Chart B2.2 and Table B2.2 present an index of change in expenditure on institutions and GDP between 1995 and 1998. All expenditure, as well as 1995 GDP, is adjusted to 1998 prices using the GDP deflator.

The country mean is calculated as the simple average over all OECD countries for which data are available. The OECD total reflects the value of the indicator if the OECD region is taken as a whole (the Reader's Guide gives details).

For comparisons over time the country mean accounts only for those countries for which data are available for all reported reference years.

Table B2.1*a*. Expenditure on educational institutions as a percentage of GDP

Direct and indirect expenditure on educational institutions from public and private sources for all levels of education, by source of fund and year

	1998			1995			1990		
	Public[1]	Private[2]	Total	Public[1]	Private[2]	Total	Public[1]	Private[2]	Total
OECD countries									
Australia*	4.34	1.13	5.46	4.46	1.00	5.46	4.11	0.75	4.86
Austria[3]	5.98	0.38	6.36	6.30	0.31	6.61	5.14	m	5.14
Belgium*	4.97	m	4.97	m	m	m	m	m	m
Belgium (Fl.)*	4.74	m	4.74	4.98	m	4.98	4.80	m	4.80
Canada	5.48	0.68	6.16	6.22	0.72	6.95	5.34	0.88	6.22
Czech Republic*	4.07	0.60	4.67	4.91	0.47	5.38	m	m	m
Denmark*	6.81	0.36	7.17	6.42	0.29	6.71	5.99	0.15	6.15
Finland	5.75	x	5.72	6.32	x	6.30	5.96	x	5.96
France*	5.88	0.36	6.24	5.94	0.38	6.32	5.23	0.43	5.66
Germany*	4.35	1.20	5.55	4.49	1.27	5.76	m	m	m
Greece[3]	3.44	1.32	4.76	2.94	m	m	m	m	m
Hungary	4.46	0.59	5.04	4.88	0.61	5.49	m	m	m
Iceland	6.55	0.32	6.87	m	m	m	4.24	0.55	4.79
Ireland	4.31	0.40	4.71	4.74	0.53	5.27	4.71	0.50	5.20
Italy	4.82	0.19	5.01	4.50	0.09	4.59	5.77	m	5.77
Japan*	3.55	1.17	4.72	3.60	1.16	4.76	3.62	1.18	4.81
Korea*	4.07	2.96	7.03	m	m	m	m	m	m
Luxembourg	m	m	m	m	m	m	m	m	m
Mexico	4.10	0.65	4.75	4.60	0.97	5.57	3.19	m	m
Netherlands	4.49	0.12	4.61	4.57	0.12	4.69	4.45	0.35	4.80
New Zealand[3]*	6.05	m	m	4.90	m	m	5.45	m	m
Norway[3]	6.77	0.13	6.90	7.05	0.15	7.20	6.18	m	6.18
Poland[3]	5.35	m	m	5.50	m	m	7.49	m	m
Portugal*	5.57	0.08	5.65	5.26	0.03	5.30	4.15	n	4.15
Slovak Republic	m	m	m	m	m	m	m	m	m
Spain	4.44	0.85	5.30	4.56	0.97	5.53	4.07	0.64	4.72
Sweden	6.59	0.18	6.77	6.31	0.11	6.42	5.28	n	5.28
Switzerland*	5.38	0.47	5.86	m	m	m	4.97	m	m
Turkey*	2.94	0.54	3.48	2.37	0.10	2.47	3.21	n	3.23
United Kingdom*	4.65	0.28	4.92	4.84	0.23	5.06	4.45	m	m
United States*	4.82	1.61	6.43	4.99	1.67	6.37	m	m	m
Country mean	**5.00**	**0.66**	**5.66**	~	~	~	~	~	~
OECD total	**4.64**	**1.11**	**5.75**	~	~	~	~	~	~
Country mean for countries with 1990, 1995 and 1998 data (20 countries)	5.13	0.42	5.55	5.17	0.40	5.57	4.92	0.38	5.30
WEI participants									
Argentina[3]	4.02	0.80	4.82	m	m	m	m	m	m
Brazil[3, 5]	4.63	m	m	m	m	m	m	m	m
Chile	3.54	2.62	6.16	m	m	m	m	m	m
Indonesia[3, 6]	1.37	0.59	1.97	m	m	m	m	m	m
Malaysia[3]	4.49	m	m	m	m	m	m	m	m
Paraguay[3]	4.43	m	m	m	m	m	m	m	m
Peru	2.90	2.14	5.04	m	m	m	m	m	m
Philippines[3, 5]	3.52	2.71	6.23	m	m	m	m	m	m
Thailand[3]	4.27	3.35	7.62	m	m	m	m	m	m
Tunisia[3, 6]	6.83	m	m	m	m	m	m	m	m
Uruguay[4]	2.83	m	m	m	m	m	m	m	m
Zimbabwe	11.61	m	m	m	m	m	m	m	m

1. Including public subsidies to households attributable for educational institutions. Including direct expenditure on educational institutions from international sources.
2. Net of public subsidies attributable for educational institutions.
3. Public subsidies to households not included in public expenditure, but in private expenditure.
4. Direct expenditure on educational institutions from international sources exeeds 1.5 per cent of all public expenditure (1998).
5. Year of reference 1997.
6. Year of reference 1999.

* See Annex 3 for notes.

Source: OECD.

Table B2.1*b*. **Expenditure on educational institutions as a percentage of GDP**

Direct and indirect expenditure on educational institutions from public and private sources, by level of education, source of fund and year

	Primary, secondary and post-secondary non-tertiary education				Tertiary education			
	1998			1995	1998			1995
	Public[1]	Private[2]	Total	Total	Public[1]	Private[2]	Total	Total
OECD countries								
Australia*	3.21	0.59	3.80	3.59	1.09	0.51	1.59	1.67
Austria[3]	3.99	0.22	4.21	4.24	1.44	0.02	1.46	1.52
Belgium*	3.52	m	3.52	m	0.91	m	0.91	m
Belgium (Fl.)*	3.36	m	3.36	3.50	0.83	m	0.83	0.87
Canada	3.72	0.34	4.06	4.31	1.53	0.32	1.85	2.17
Czech Republic	2.74	0.39	3.13	3.67	0.76	0.12	0.88	0.96
Denmark	4.25	0.09	4.34	4.13	1.49	0.04	1.53	1.60
Finland	3.67	x	3.66	4.03	1.68	x	1.67	1.90
France	4.14	0.22	4.35	4.39	1.01	0.12	1.13	1.14
Germany*	2.79	0.89	3.68	3.49	0.97	0.08	1.04	1.09
Greece[3]	2.32	1.15	3.47	2.30	1.04	0.17	1.21	0.70
Hungary	2.85	0.25	3.10	3.61	0.80	0.21	1.01	1.01
Iceland	4.25	m	m	m	1.74	0.04	1.78	m
Ireland[5]	3.18	0.10	3.28	3.71	1.08	0.30	1.38	1.33
Italy	3.43	0.04	3.47	3.23	0.68	0.16	0.84	0.76
Japan*	2.78	0.25	3.03	m	0.43	0.60	1.02	m
Korea*	3.15	0.80	3.95	m	0.44	2.07	2.51	m
Luxembourg	m	m	m	m	m	m	m	m
Mexico	3.00	0.48	3.48	4.02	0.78	0.11	0.89	1.06
Netherlands	2.97	0.08	3.06	3.08	1.15	0.03	1.18	1.24
New Zealand[3]*	4.61	m	m	3.65	1.06	m	m	1.09
Norway[3]	4.38	0.04	4.42	4.23	1.42	0.09	1.51	1.69
Poland[3]	3.48	m	m	m	1.16	m	m	m
Portugal*	4.22	n	4.22	3.80	0.96	0.08	1.04	0.93
Slovak Republic	m	m	m	m	m	m	m	m
Spain	3.26	0.40	3.65	3.88	0.84	0.27	1.11	1.03
Sweden[5]	4.51	0.01	4.52	m	1.49	0.17	1.67	m
Switzerland*	3.99	0.47	4.46	m	1.11	n	1.11	m
Turkey*	1.82	0.51	2.33	1.78	0.81	0.03	0.84	0.69
United Kingdom*	3.40	m	m	m	0.83	0.28	1.11	1.19
United States[4]*	3.40	0.35	3.74	m	1.07	1.22	2.29	m
Country mean	**3.47**	**0.35**	**3.71**	~	**1.06**	**0.29**	**1.33**	~
OECD total	**3.28**	**0.37**	**3.64**	~	**0.93**	**0.67**	**1.59**	~
Country mean for countries with 1995 data only	~	~	3.65	3.62	~	~	1.23	1.24
WEI participants								
Argentina[3]	2.75	0.33	3.07	m	0.85	0.29	1.14	m
Brazil[3, 6]	3.11	m	m	m	1.07	m	m	m
Chile	2.66	1.21	3.87	m	0.57	1.27	1.85	m
India[3, 4]	7.94	m	m	m	m	m	m	m
Indonesia[3, 7]	1.12	0.25	1.36	m	0.25	0.33	0.58	m
Jordan	4.10	n	4.10	m	m	m	m	m
Malaysia[3]	3.01	m	m	m	1.26	m	m	m
Paraguay[3]	3.49	m	m	m	0.95	m	m	m
Peru[3]	2.03	1.25	3.28	m	0.59	0.73	1.32	m
Philippines[3, 6]	2.91	1.95	4.86	m	0.51	0.64	1.15	m
Thailand[3]	2.38	1.42	3.80	m	0.84	1.74	2.58	m
Tunisia[3, 7]	5.35	m	m	m	1.47	m	m	m
Uruguay[5]	1.99	m	m	m	0.60	m	m	m
Zimbabwe[4]	9.29	m	m	m	2.32	m	m	m

1. Including public subsidies to households attributable for educational institutions. Including direct expenditure on educational institutions from international sources.
2. Net of public subsidies attributable for educational institutions.
3. Public subsidies to households not included in public expenditure, but in private expenditure.
4. Post-secondary non-tertiary included in tertiary education.
5. Direct expenditure on tertiary level educational institutions from international sources exeeds 1.5 per cent of all public expenditure (1998). International sources at primary and secondary level exeed 1.5 per cent in Uruguay.
6. Year of reference 1997.
7. Year of reference 1999.

* See Annex 3 for notes.

Source: OECD.

B2

Table B2.1c. **Expenditure on educational institutions as a percentage of GDP (1998)**

Direct and indirect expenditure from public and private sources[1] on educational institutions, by level of education and year

	Pre-primary education	Primary, secondary and post-secondary non-tertiary education				Tertiary education			All levels of education combined (including undistributed and advanced research programmes)
		All primary, secondary and post-secondary non-tertiary	Primary and lower secondary	Upper secondary	Post-secondary non-tertiary	All tertiary	Tertiary-type B	Tertiary-type A	
OECD countries									
Australia*	0.1	3.8	2.8	1.0	0.1	1.6	0.2	1.4	5.5
Austria	0.5	4.2	2.8	1.4	n	1.5	0.3	1.2	6.4
Belgium*	0.5	3.5	x	x	x	0.9	x	x	5.0
Canada	0.2	4.1	x	x	0.2	1.9	0.5	1.3	6.2
Czech Republic	0.5	3.1	2.0	1.1	0.1	0.9	0.1	0.8	4.7
Denmark*	1.1	4.3	2.9	1.4	n	1.5	x	x	7.2
Finland*	0.4	3.7	2.4	1.2	x	1.7	0.2	1.5	5.7
France	0.7	4.4	2.8	1.5	n	1.1	0.3	0.9	6.2
Germany*	0.6	3.7	2.1	1.3	0.3	1.0	0.1	1.0	5.5
Greece	x	3.5	x	x	x	1.2	x	x	4.8
Hungary	0.8	3.1	1.9	1.1	0.1	1.0	a	1.0	5.0
Iceland	m	m	m	m	m	1.8	0.9	0.9	6.9
Ireland	n	3.3	2.4	0.7	0.1	1.4	x	x	4.7
Italy	0.4	3.5	2.1	1.3	0.1	0.8	n	0.8	5.0
Japan*	0.2	3.0	2.1	0.9	x	1.0	0.1	0.9	4.7
Korea*	0.1	4.0	2.7	1.3	n	2.5	0.7	1.8	7.0
Luxembourg	m	m	m	m	m	m	m	m	m
Mexico	0.4	3.5	2.7	0.8	a	0.9	x	0.9	4.7
Netherlands	0.4	3.1	2.2	0.8	n	1.2	n	1.2	4.6
New Zealand*	m	m	m	m	m	m	m	m	m
Norway	0.6	4.4	3.0	1.5	x	1.5	x	1.5	6.9
Poland	m	m	m	m	m	m	m	m	m
Portugal*	0.2	4.2	2.8	1.2	n	1.0	x	x	5.7
Slovak Republic	m	m	m	m	m	m	m	m	m
Spain	0.4	3.7	1.3	2.4	x	1.1	x	x	5.3
Sweden*	0.6	4.5	3.0	1.5	n	1.7	x	x	6.8
Switzerland*	0.2	4.5	2.8	1.6	0.1	1.1	0.1	1.0	5.9
Turkey*	m	2.3	1.6	0.7	m	0.8	x	x	3.5
United Kingdom*	m	m	m	m	m	1.1	x	x	4.9
United States[2]*	0.4	3.7	x	x	x	2.3	x	x	6.4
Country mean	**0.4**	**3.7**	**2.4**	**1.2**	**0.1**	**1.3**	**0.3**	**1.1**	**5.5**
OECD total	**0.4**	**3.6**	**2.3**	**1.2**	**0.1**	**1.6**	**x**	**x**	**5.7**
WEI participants									
Argentina	0.5	3.1	2.4	0.7	n	1.1	0.4	0.7	4.8
Chile	0.4	3.9	2.7	1.2	n	1.8	0.2	1.7	6.2
Indonesia[3]	n	1.4	1.0	0.4	n	0.6	x	x	2.0
Jordan	n	4.1	3.5	0.6	a	m	m	m	m
Peru	0.4	3.3	x	x	a	1.3	0.3	1.0	5.0
Philippines[4]	0.1	4.9	4.3	0.4	0.1	1.2	n	1.2	6.2
Thailand	0.6	3.8	2.9	0.9	n	2.6	0.6	2.0	7.6
Uruguay	0.3	2.1	1.6	0.5	n	0.6	x	0.6	3.0

1. Including international sources.
2. Post-secondary non-tertiary data included in tertiary education.
3. Year of reference 1999.
4. Year of reference 1997.
* See Annex 3 for notes.

Source: OECD.

Table B2.2. **Change of expenditure on educational institutions**

Index of change between 1995 *and* 1998 *in public and private expenditure on educational institutions, by level of education* (1995 = 100)

	All levels of education			Primary and secondary education			Tertiary education		
	Direct public expenditure for educational institutions	Direct private expenditure for educational institutions	Total direct expenditure from both public and private sources for educational institutions	Direct public expenditure for educational institutions	Direct private expenditure for educational institutions	Total direct expenditure from both public and private sources for educational institutions	Direct public expenditure for educational institutions	Direct private expenditure for educational institutions	Total direct expenditure from both public and private sources for educational institutions
Australia	109	131	114	116	130	118	95	133	109
Austria	103	101	103	103	143	105	104	46	102
Belgium (Fl.)	103	m	103	104	x	104	103	m	103
Canada	97	105	99	98	115	99	91	101	95
Czech Republic	90	75	88	84	91	85	113	45	94
Denmark	115	136	116	113	112	113	99	473	102
Finland	107	x	107	106	x	106	105	x	105
France	105	100	105	106	102	105	107	97	105
Germany	101	98	101	102	101	102	99	107	101
Greece	132	m	m	112	m	m	178	m	m
Hungary	101	112	102	92	88	91	107	133	112
Ireland	116	115	116	110	93	110	140	121	134
Italy	111	m	m	109	m	m	104	170	116
Mexico	105	79	101	105	86	102	113	53	99
Netherlands	109	107	109	110	103	110	105	113	106
New Zealand	129	m	m	132	m	m	102	m	m
Norway	108	94	107	117	94	117	101	94	100
Poland	116	m	m	116	m	m	156	m	m
Portugal	118	268	119	124	170	124	119	273	124
Spain	108	101	106	108	84	105	116	130	119
Turkey	148	505	167	129	561	155	141	247	145
United Kingdom	106	106	106	108	m	m	99	105	101

Source: OECD.

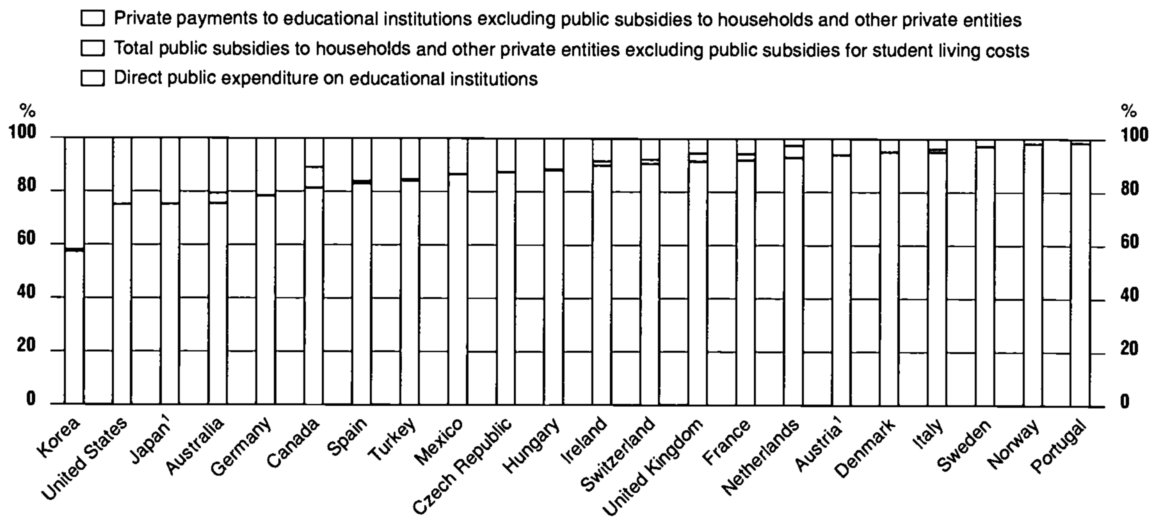
RELATIVE PROPORTIONS OF PUBLIC AND PRIVATE INVESTMENT IN EDUCATIONAL INSTITUTIONS

B3

- The private share of total payments to educational institutions ranges from 3 per cent or less in Norway, Portugal and Sweden to as much as 43 per cent in Korea.
- In a number of countries, governments pay most of the costs of primary and secondary education but leave the management of educational institutions to the private sector, thus seeking to provide a wider range of learning opportunities without creating barriers to the participation of students from low-income families.
- Private institutions that are predominantly financed by households are far less common at the primary and secondary levels than government-funded institutions.
- Tertiary institutions tend to mobilise a much higher proportion of their funds from private sources than primary and secondary institutions, the private share ranging from 3 per cent or less in Denmark and Sweden up to 83 per cent in Korea.
- In 6 out of 16 countries, private expenditure on tertiary education grew by more than 30 per cent between 1995 and 1998, but in most countries this did not lead to a decrease in public-sector spending on tertiary education.

Chart B3.1. **Distribution of public and private funds on educational institutions (1998)**

Distribution of public and private sources of funds for public and private educational institutions (after transfers from public sources), for all levels of education



1. Total public subsidies to households data may be included in private payments data.

Countries are ranked in ascending order of the proportion of direct public expenditure at all levels of education.

Source: OECD. Table B3.1.

POLICY CONTEXT

This indicator shows the relative proportions of public and private spending on educational institutions...

... and how these proportions have changed since 1995

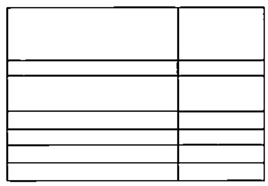
Cost-sharing between participants in the education system and society as a whole is an issue that is under discussion in many countries. This question is especially relevant at the beginning and ending stages of initial education – pre-primary and tertiary education – where full or nearly full public funding is less common.

With increased participation drawing from new client groups, and a wider range of educational opportunities, programmes and providers, governments are forging new partnerships to mobilise the necessary resources to pay for education. New policies are designed to allow the different actors and stakeholders to participate more fully and to share costs and benefits more equitably.

As a result, public funding is now increasingly seen as providing only a part, although a very important part, of investment in education. Private sources are playing an increasingly important role in the funding of education. Many countries are concerned that this balance should not become so tilted as to lead potential learners away from learning, instead of towards it.

EVIDENCE AND EXPLANATIONS

What this indicator covers and what it does not cover



Coverage diagram (see page 55 for explanations)

Governments can spend public funds directly on educational institutions or use them to provide subsidies to private entities for the purpose of education. When reporting on the public and private proportions of educational expenditure, it is therefore important to distinguish between the initial sources of funds and the final direct purchasers of educational goods and services.

Initial public spending includes both direct public expenditure on educational institutions and transfers to the private sector. To gauge the level of public expenditure, the segments showing direct public expenditure and public subsidies for education in Charts B3.1 and B3.2 therefore need to be added together. Initial private spending includes tuition fees and other student or household payments to educational institutions, less the portion of such payments offset by public subsidies.

The final public and private proportions are the percentages of educational funds spent directly by public and private purchasers of educational services. Final public spending includes direct public purchases of educational resources and payments to educational institutions and other private entities. Final private spending includes tuition fees and other private payments to educational institutions (whether or not offset by public subsidies).

Not all spending on instructional goods and services occurs within educational institutions. For example, families may purchase textbooks and materials commercially or seek private tutoring for their children outside educational institutions. At the tertiary level, student living costs and forgone earnings can also account for a significant proportion of the costs of education.

All such expenditure outside educational institutions is excluded from this indicator, even if it is publicly subsidised. Public subsidies for educational expenditure outside institutions are discussed in indicators B4 and B5.

Public and private proportions of expenditure on educational institutions

Educational institutions are still mainly funded by public sources...

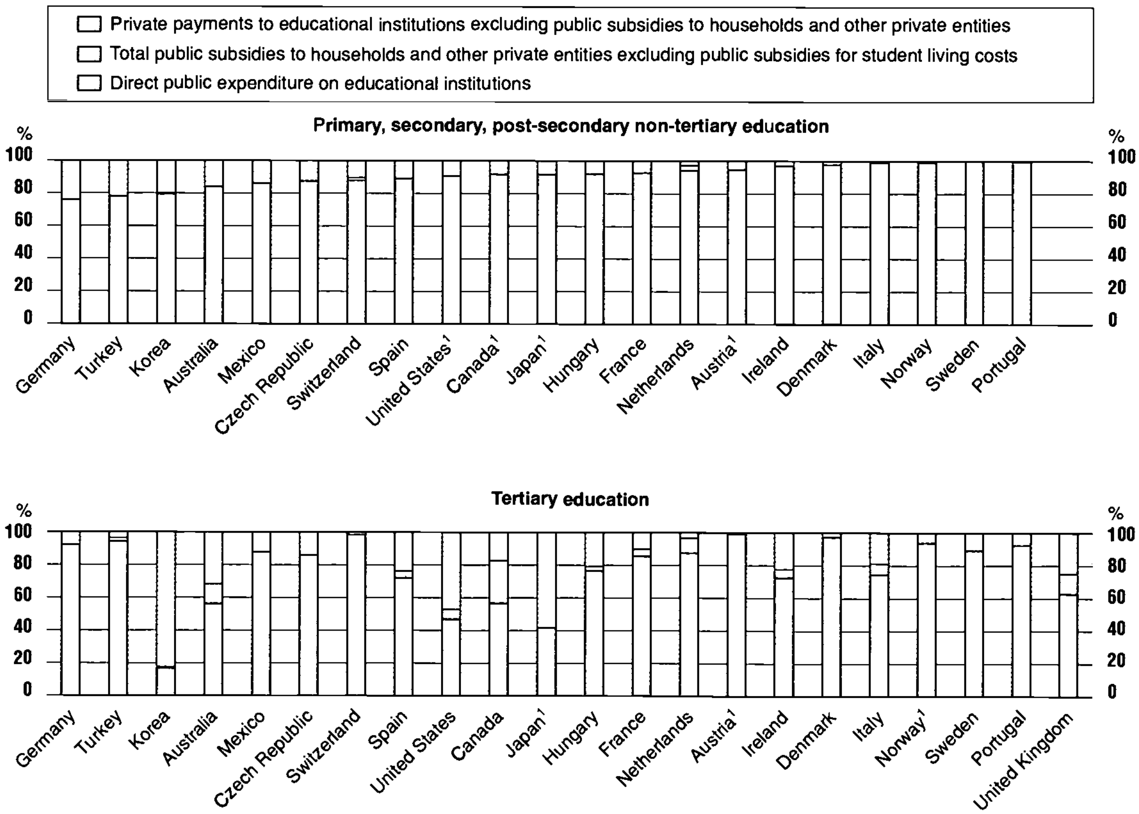
Schools, universities and other educational institutions are still mainly publicly funded, although there is a substantial and growing degree of private funding. On average across OECD countries, 89 per cent of all funds for educational institutions come from public sources, of which 1.5 per cent are channelled to institutions *via* public subsidies to households (Table B3.1).

... but countries vary significantly in the extent to which they draw on private funds.

Among the OECD countries reporting data, the proportion of private payments to educational institutions, including private payments that are subsidies, ranges from less than 3 per cent in Norway, Portugal and Sweden to between 21 and 41 per cent in Australia, Germany, Japan, Korea and the United States (Chart B3.1).

Chart B3.2. **Distribution of public and private funds on educational institutions (1998)**

Distribution of public and private sources of funds for public and private educational institutions (after transfers from public sources), by level of education



1. Total public subsidies to households data may be included in private payments data.
2. Post-secondary non-tertiary is included in tertiary or missing.

Countries are ranked in ascending order of the proportion of direct public expenditure in primary, secondary and post-secondary non-tertiary education.

Source: OECD. Table B3.2.

At the primary, secondary and post-secondary non-tertiary levels of education, more than 10 per cent of funding comes from private sources only in Australia, the Czech Republic, Mexico, Spain and Switzerland and 20 per cent only in Germany, Korea and Turkey.

The way in which education is financed differs between the primary/secondary and tertiary levels.

In most countries, private sector expenditure is comprised mainly of household expenditure on tuition and other fees in tertiary institutions, while in Germany and Switzerland nearly all private expenditure is accounted for by contributions from the business sector to the dual system of apprenticeship at the upper secondary level.

New funding strategies aim not only at mobilising the required resources from a wider range of public and private sources, but also at providing a broader range of learning opportunities and improving the efficiency of schooling. In the majority of OECD countries, publicly funded primary and secondary education is also organised and delivered by public institutions, but in a fair number of countries the public funds are finally transferred to private institutions or given directly to households to spend in the institution of their choice. In the former case, the final spending and delivery of education can be regarded as subcontracted by governments to non-governmental institutions, whereas in the latter instance, students and their families are left to decide which type of institution best meets their requirements.

In some countries, governments pay most of the costs of primary/secondary education but leave the management of educational institutions to the private sector...

On average across OECD countries, 10.6 per cent of primary and secondary students combined are enrolled in privately managed educational institutions that are predominantly publicly funded (see Table C1.4). In Belgium and the Netherlands, the majority of primary and secondary students are enrolled in government-dependent private institutions (58.3 and 76.3 per cent respectively), and in Australia, Korea, Spain and the United Kingdom the proportion is still more than 20 per cent (including primary and secondary institutions other than schools). Although these institutions are privately managed, the financial support from governments can have attendant conditions. For example, teachers may be required to meet some minimum level of qualification, and students may be required to pass a government-regulated examination in order to graduate.

... thus seeking to provide a wider range of learning opportunities without creating barriers to the participation of students from low-income families.

At the primary and secondary levels of education, private educational institutions that are mainly financed by household payments are far less common and sometimes seen as erecting barriers to the participation of students from lower-income families. Only in Japan, Mexico, Portugal and the United States are around 10 per cent of students enrolled in private institutions that are predominantly financed through unsubsidised household payments (see Table C1.4).

Private institutions that are predominantly financed by households are far less common at the primary and secondary levels.

With four exceptions, the private proportion of educational expenditure is far higher at the tertiary level than at the primary and secondary levels. While primary and secondary education are usually perceived as a public good with mainly public returns, at the tertiary level the high private returns in the form of better employment and income opportunities (see indicators E1 and E5) suggest that a greater contribution by individuals to the costs of tertiary education may be justified provided, of course, that governments can

Tertiary institutions tend to mobilise a much higher proportion of their funds from private sources...

ensure that funding is accessible to students irrespective of their economic background (see also indicator B5).

... but the private share ranges from 3 per cent or less in Austria, Denmark, Iceland and Switzerland to 83 per cent in Korea.

The proportion of expenditure on tertiary institutions covered by individuals, businesses and other private sources, net of public financial aid to students, ranges from 3 per cent or less in Austria, Denmark, Iceland and Switzerland to over one third in Australia, Canada, Japan, Korea, the United Kingdom and the United States. In Japan, more than half of all final funds originate from private sources, and in Korea the figure exceeds 80 per cent. Over 75 per cent of Korean students are enrolled in private universities, more than 95 per cent of whose budgets are derived from tuition fees. The proportion of private funding of public universities, which provide for 23 per cent of student enrolment, is much smaller, less than 40 per cent.

The amounts paid by students and their families to cover tuition fees and other education-related expenditure differ between countries according to taxation and spending policies, and the willingness of governments to support students. This willingness, in turn, is influenced by students' enrolment status (full-time or part-time), age, and residency (whether they are living at home). To some extent, however, the guidelines used in establishing eligibility for these subsidies are breaking down. Mature students, whose numbers are increasing (indicator C3), are more likely to have established their own households and to prefer part-time or distance learning to full-time, on-campus study.

The proportion of private funding of primary and secondary education tends to be higher in countries with low levels of GDP per capita.

As shown in Chart B3.3, which shows private spending in relation to national income, the proportion of private funding of primary and secondary institutions tends to be higher in countries with low levels of GDP per capita. Five out of seven countries with a private proportion of more than 10 per cent have a GDP per capita of below 20 000 US dollars, converted using PPPs. On the other hand, only two of 13 countries with a proportion of private funding below 10 per cent have a GDP per capita below 20 000 US dollars. This suggests that some families decide to send their children to private schools at their own expense if insufficient public resources are available. Such a relationship is far less obvious at the tertiary level of education.

Changes in public and private investment in education

The scale of private-sector funding of education has increased.

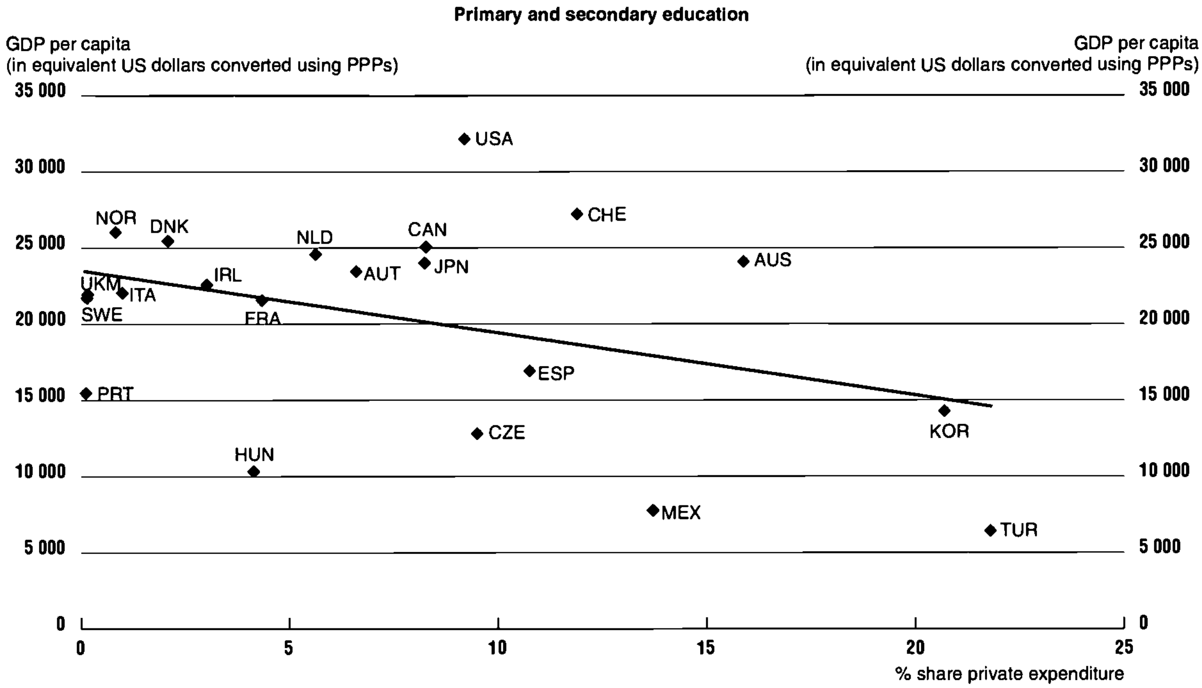
Direct private expenditure on educational institutions increased by over 5 per cent in absolute terms between 1995 and 1998 in nine out of 16 OECD countries with comparable data. Increases range from 5 per cent in Canada to 100 per cent or more in Portugal and Turkey. Only three countries, the Czech Republic, Mexico and Norway, saw a decline in the private proportion of more than 5 per cent (Chart B3.4).

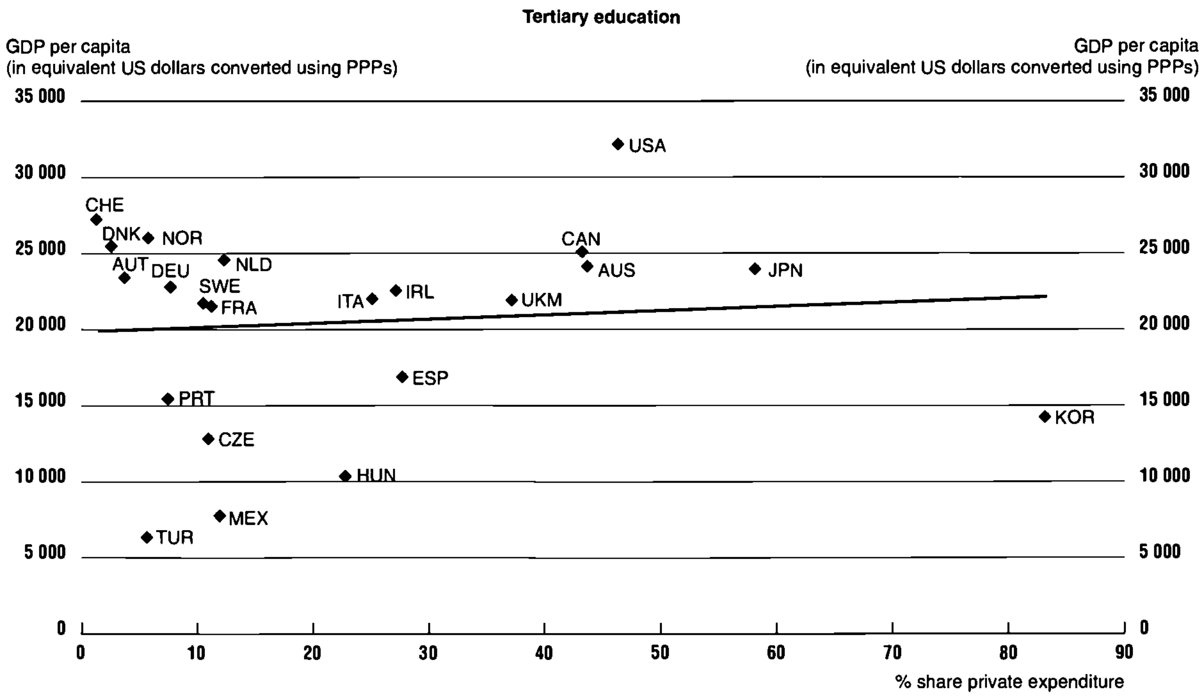
In Austria, Canada and Turkey, private spending on primary and secondary education increased faster than public spending...

Four countries at the primary and secondary level of education saw a significant growth in private spending between 1995 and 1998. In Australia, Austria and Canada, private funds grew by between 15 and 43 per cent while public funds remained at the same level as in 1995. In Turkey, private spending at the primary and secondary level increased fivefold. Despite a significant increase in public funding in Turkey, the proportion of private funds in total spending grew from 6 per cent in 1995 to 22 per cent in 1998 (Chart B3.4 and Table B3.2).

Chart B3.3. **Share of private expenditure on educational institutions and GDP per capita (1998)**

Private expenditure on public and private educational institutions as a percentage of total expenditure on educational institutions versus GDP per capita (in equivalent US dollars converted using PPPs), by level of education

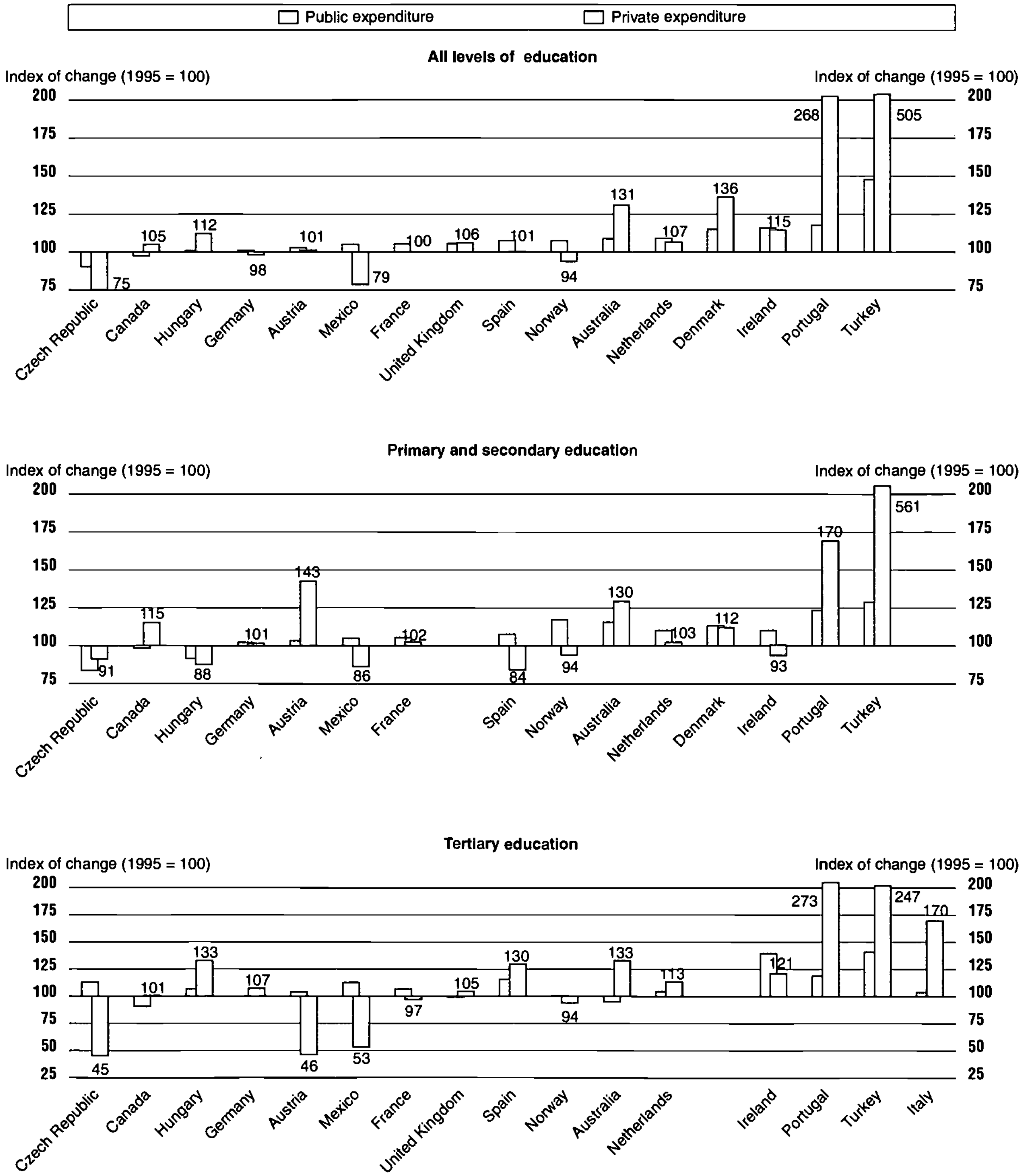




Source: OECD. Table B3.2, Annex 2.

Chart B3.4. **Change in private expenditure compared to change in public expenditure (1998)**

Index of change in expenditure on public and private educational institutions between 1995 and 1998, by source of funds (1995 = 100)



Note: Countries with a share of total funding from private sources of 2 per cent or less are not represented in the chart on the according level.

Countries are ranked in ascending order of change in public expenditure for all levels of education between 1995 and 1998.

Source: OECD. Table B2.2.

In many countries, the growth in tertiary participation (indicator C3) represents a response to heavy demand, both individual and social. But, just as tertiary structures and programmes were designed for a different age, so too were its funding mechanisms. Hence, as demand for tertiary education has increased in many countries, so has the share of the financial burden borne by families. In every country with available data except Canada and Norway, the change in direct private expenditure is much greater with respect to tertiary institutions than with respect to primary and secondary institutions.

... but changes are most striking in tertiary education, where a dramatic growth in participation represents the response to heavy demand...

The increase in private household spending at the tertiary level is explained by one or more of four factors: *i)* an increase in enrolments, *ii)* increased or newly imposed fees, charges or contributions, *iii)* a rise in the costs of education-related goods and services other than institutions, and *iv)* growth in enrolment in private institutions with higher fees.

... which is explained by four main factors.

Seven out of 17 OECD countries reported an increase in private spending on tertiary education institutions of more than 20 per cent between 1995 and 1998. Some countries, most notably Hungary and Italy, saw a clear shift in the relative proportions of public and private investment in tertiary education institutions between 1995 and 1998. In Italy, the private-sector proportion increased from 17 to 25 per cent and in Hungary, from as little as 2 per cent in 1995 to 23 per cent in 1998. However, there are exceptions to this pattern: in Ireland, an increase of 21 per cent in private-sector funding of tertiary institutions between 1995 and 1998 was outpaced by an increase in public funds of 40 per cent. In Austria, the Czech Republic and Mexico, private funding of tertiary education decreased by around half between 1995 and 1998. As a consequence, the proportion of private funding of educational institutions relative to total spending decreased from almost 30 per cent in 1995 to less than 15 per cent in the Czech Republic, and from 23 to 12 per cent in Mexico (Chart B3.4 and Table B3.2).

In seven out of 17 countries, the private proportion of tertiary education funding grew by more than 20 per cent between 1995 and 1998...

It is important to note that rises in private educational expenditure have not generally been accompanied by falls in public expenditure on education, either in primary and secondary education or at the tertiary level. On the contrary, Chart B3.4 shows that public investment in education has increased in all but three countries for which 1995 to 1998 data are available, regardless of changes in private spending. In fact, some of the countries with the highest growth in private spending have also shown the highest increase in public funding of education. This indicates that increasing private spending on tertiary education tends to complement, rather than replace, public investment.

... but in most countries, this did not lead to a decrease in public-sector spending on tertiary education.

New funding strategies aim not only at mobilising the required resources from a wider range of public and private sources, but also at influencing student behaviour in ways that make education more cost-effective. It is hard to determine the precise impact of tuition fees on learners' behaviour, partly because fees cannot be seen in isolation from grants, taxation and implicit subsidies through loans. But many countries in which students and their families spend more on tertiary education show some of the highest tertiary participation and completion rates (indicator C3).

Many countries in which students or their families contribute to the funding of tertiary education show some of the highest participation rates...

... while several countries with predominantly public funding show only low levels of participation.

Conversely, in the six countries with the lowest entry rates to university-level education, the Czech Republic, Denmark, France, Germany, Mexico and Switzerland, private sources of funds account only for between 3 and 15 per cent of total spending on tertiary institutions (Tables B3.2, C3.1). It is therefore not obvious that the participation of the beneficiaries of tertiary studies in the financing of their education creates economic barriers – provided, of course, that governments develop appropriate strategies to make funding accessible to students from all income groups.

DEFINITIONS AND METHODOLOGIES

Data refer to the financial year 1998 and are based on the UOE data collection on educational statistics administered in 2000 (for details see Annex 3).

The public and private proportions of expenditure on educational institutions are the percentages of total spending originating in, or generated by, the public and private sectors. Private spending includes all direct expenditure on educational institutions, whether partially covered by public subsidies or not. Public subsidies attributable to households, included in private spending, are shown separately.

Parts of the budgets of educational institutions are related to ancillary services offered to students, commonly student welfare services, such as student meals, housing and transportation. Some of the costs for these services are covered by fees collected from students. Those are included.

The data for 1995 are based on a special survey on trend data in 2000.

The change in private and public spending on educational institutions is shown as an index of change, and compares the proportion of private spending in 1995 with that in 1998. Trend data were collected through a special survey to ensure comparability between 1995 and 1998 data. Data for 1995 are obtained following the same methodology, coverage and definitions as the data for 1998.

Note that a large increase or decrease in private spending (Chart B3.4) in countries where private spending is small in relation to total spending, may only represent a small additional burden on households, while a comparatively small change in spending applied to a high level of private funding can translate into substantial additional funds for educational institutions.

The Glossary at the end of this volume gives a definition of public, government-dependent private and independent private institutions.

Table B3.1. **Relative proportions of public and private funds for educational institutions for all levels of education**
Distribution of public and private sources of funds for educational institutions after transfers from public sources, by year

	1998			1995		
	Public sources	Private sources[1]	Private: *of which*: subsidised	Public sources	Private sources[1]	Private: *of which*: subsidised
OECD countries						
Australia	75.5	24.5	3.9	78.7	21.3	3.0
Austria	94.0	6.0	x	93.9	6.1	1.4
Belgium	m	m	m	m	m	m
Canada	81.2	18.8	7.8	82.3	17.7	a
Czech Republic	87.2	12.8	n	85.0	15.0	6.2
Denmark	95.0	5.0	n	95.7	4.3	n
Finland	m	m	m	m	m	1.2
France	91.8	8.2	2.4	91.4	8.6	2.6
Germany	78.3	21.7	0.1	77.8	22.2	n
Greece	m	m	m	m	m	n
Hungary	87.9	12.1	0.5	89.0	11.0	n
Iceland	m	m	m	m	m	m
Ireland	89.9	10.1	1.4	89.8	10.2	m
Italy	95.0	5.0	1.1	97.1	2.9	0.9
Japan	75.2	24.8	m	m	m	m
Korea	57.4	42.6	0.5	m	m	m
Luxembourg	m	m	m	m	m	m
Mexico	86.4	13.6	n	82.6	17.4	m
Netherlands	92.8	7.2	4.7	92.6	7.4	4.8
New Zealand	m	m	m	m	m	m
Norway	98.1	1.9	n	97.9	2.1	m
Poland	m	m	m	m	m	m
Portugal	98.5	1.5	n	99.4	0.6	m
Spain	83.1	16.9	0.8	82.1	17.9	0.4
Sweden	97.3	2.7	a	m	m	m
Switzerland	90.5	9.5	1.4	m	m	m
Turkey	84.0	16.0	0.5	94.7	5.3	1.2
United Kingdom	91.4	8.6	2.9	91.5	8.5	4.0
United States	75.0	25.0	x	m	m	m
Country mean	**86.6**	**13.4**	**1.5**	~	~	~
WEI participants						
Argentina	83.5	16.5	x	m	m	m
Chile	55.5	44.5	2.0	m	m	m
Indonesia[2]	69.7	30.3	4.1	m	m	m
Israel	80.0	20.0	2.4	m	m	m
Peru	57.5	42.5	n	m	m	m
Philippines[3]	56.3	43.7	x	m	m	m
Thailand	56.0	44.0	x	m	m	m
Uruguay	93.8	6.2	n	m	m	m

1. Including subsidies attributable to payments to educational institutions received from public sources.
2. Year of reference 1999.
3. Year of reference 1997.
Source: OECD.

B3

Table B3.2. Relative proportions of public and private funds for educational institutions

Distribution of public and private sources of funds for educational institutions after transfers from public sources, by level of education and year

	Primary, secondary and post-secondary non-tertiary education						Tertiary education					
	1998			1995			1998			1995		
	Public sources	Private sources[1]	Private: *of which:* subsidised	Public sources	Private sources[1]	Private: *of which:* subsidised	Public sources	Private sources[1]	Private: *of which:* subsidised	Public sources	Private sources[1]	Private: *of which:* subsidised
OECD countries												
Australia	84.1	15.9	n	85.5	14.5	0.7	56.1	43.9	12.0	64.2	35.8	8.1
Austria	94.8	5.2	x	96.1	3.9	x	98.9	1.1	x	97.6	2.4	x
Belgium	m	m	m	m	m	m	m	m	m	m	m	m
Canada	91.7	8.3	x	93.7	6.3	a	56.6	43.4	26.1	59.1	40.9	a
Czech Republic	87.5	12.5	n	88.6	11.4	6.8	85.9	14.1	n	71.0	29.0	8.6
Denmark	97.9	2.1	n	97.8	2.2	n	97.2	2.8	n	m	m	n
Finland	m	m	m	m	m	0.6	m	m	m	m	m	2.8
France	92.7	7.3	2.4	92.5	7.5	2.4	85.5	14.5	4.2	84.3	15.7	5.0
Germany	75.9	24.1	n	75.5	24.5	n	92.1	7.9	n	92.7	7.3	n
Greece	m	m	m	m	m	n	m	m	m	m	m	n
Hungary	92.0	8.0	n	91.7	8.3	n	76.6	23.4	2.4	97.5	2.5	n
Iceland	m	m	m	m	m	m	97.7	2.3	x	m	m	m
Ireland	96.9	3.1	n	96.5	3.5	m	72.6	27.4	4.9	69.7	30.3	x
Italy	99.0	1.0	n	100.0	n	1.2	74.7	25.3	6.3	82.8	17.2	0.1
Japan	91.7	8.3	m	m	m	m	41.7	58.3	m	m	m	m
Korea	79.3	20.7	0.4	m	m	m	16.7	83.3	0.7	m	m	m
Luxembourg	m	m	m	m	m	m	m	m	m	m	m	m
Mexico	86.2	13.8	n	83.8	16.2	m	87.9	12.1	n	77.4	22.6	m
Netherlands*	94.3	5.7	3.0	93.9	6.1	3.0	87.5	12.5	9.0	88.3	11.7	10.2
New Zealand	m	m	m	m	m	m	m	m	m	m	m	m
Norway	99.1	0.9	n	98.9	1.1	m	94.0	6.0	x	93.6	6.4	m
Poland	m	m	m	m	m	m	m	m	m	m	m	m
Portugal	99.9	0.1	a	100.0	n	m	92.3	7.7	n	96.5	3.5	m
Spain	89.2	10.8	n	86.6	13.4	n	72.1	27.9	3.9	74.4	25.6	2.0
Sweden	99.8	0.2	a	m	m	m	89.3	10.7	n	m	m	m
Switzerland	88.1	11.9	1.3	m	m	m	98.5	1.5	1.5	m	m	m
Turkey	78.2	21.8	n	94.0	6.0	n	94.2	5.8	2.1	96.6	3.4	4.2
United Kingdom	m	m	m	m	m	0.4	62.7	37.3	12.4	63.9	36.1	16.0
United States[2]	90.8	9.2	x	m	m	m	46.8	53.2	5.7	m	m	m
Country mean	**90.9**	**9.1**	**0.4**	~	~		**77.3**	**22.7**	**4.8**	~	~	
WEI participants												
Argentina	89.4	10.6	x	m	m	m	74.3	25.7	x	m	m	m
Chile	68.7	31.3	a	m	m	m	24.2	75.8	6.7	m	m	m
Indonesia[3]	81.8	18.2	5.9	m	m	m	43.6	56.4	m	m	m	m
Israel	92.8	7.2	1.3	m	m	m	59.4	40.6	6.5	m	m	m
Jordan	100.0	a	a	m	m	m	m	m	m	m	m	m
Peru	61.8	38.2	a	m	m	m	44.6	55.4	n	m	m	m
Philippines[4]	59.7	40.3	x	m	m	m	44.2	55.8	x	m	m	m
Thailand	62.7	37.3	x	m	m	m	32.5	67.5	x	m	m	m
Uruguay	93.1	6.9	a	m	m	m	100.0	a	a	m	m	m

1. Including subsidies attributable to payments to educational institutions received from public sources.
   To calculate private funds net of subsidies, subtract public subsidies (columns 3, 6, 9) from private funds (columns 2, 5, 8).
   To calculate total public funds, including public subsidies, add public subsidies (columns 3, 6, 9) to direct public funds (columns 1, 4, 7).
2. Post-secondary non-tertiary data are included in tertiary education or are missing.
3. Year of reference 1999.
4. Year of reference 1997.

* See Annex 3 for notes.

Source: OECD.

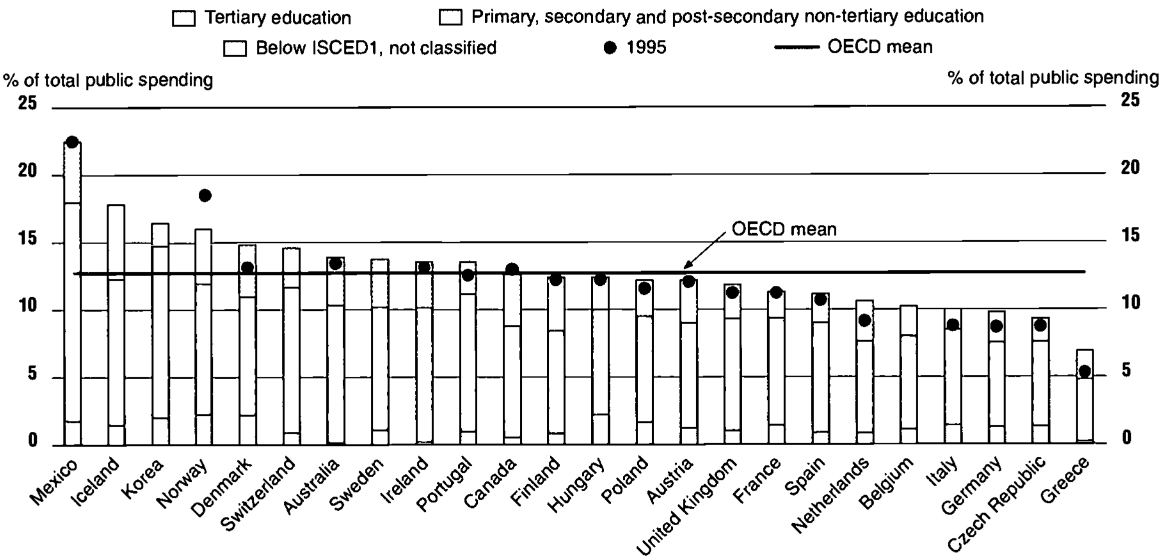
TOTAL PUBLIC EXPENDITURE ON EDUCATION

B4

- On average, OECD countries devote 12.9 per cent of total government expenditure to educational institutions.
- Public funding of education is a social priority, even in countries with little public involvement in other areas.
- In real terms, public expenditure on education increased by more than 5 per cent in two out of three OECD countries between 1995 and 1998.
- Public expenditure on education tended to grow faster than total government spending, but not as fast as GDP. In Hungary, Italy, the Netherlands and the United Kingdom, educational expenditure increased despite shrinking public budgets.

Chart B4.1. **Public expenditure on education as a percentage of total public expenditure (1998)**

Direct public expenditure on public and private educational institutions plus public subsidies to the private sector as a percentage of total public expenditure, by level of education and year



Countries are ranked in descending order of total expenditure from both public and private sources on public and private educational institutions.

Source: OECD. Table B4.1.

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POLICY CONTEXT

This indicator focuses on public expenditure on education.

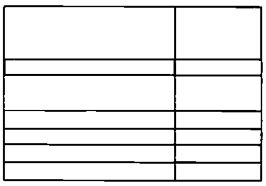
Governments become involved in providing services to the public for different reasons. If the public benefit from a particular service is greater than the private benefit, then markets alone may fail to provide these services adequately. Education is one area where all governments intervene to fund or direct the provision of services. As there is no guarantee that markets will provide equal access to educational opportunities, government funding of educational services ensures that education is not beyond the reach of some members of society. Public expenditure on education as a percentage of total public expenditure indicates the value of education relative to that of other public investments such as health care, social security, defence and security.

It also evaluates how public expenditure has changed over time in absolute terms and relative to total governmental spending.

In the second half of the 1990s, most OECD countries made serious efforts to consolidate public budgets. Education had to compete for public financial support against a wide range of other areas covered in government budgets. This indicator evaluates the change in educational expenditure in absolute terms and relative to changes in the size of public budgets.

EVIDENCE AND EXPLANATIONS

What this indicator covers and what it does not cover



Coverage diagram
(see page 55 for explanations)

This indicator shows total public expenditure on education. This expenditure includes direct public expenditure on educational institutions as well as public subsidies to households (*e.g.*, scholarships and loans to students for tuition fees and student living costs) and to other private entities for education (*e.g.*, subsidies to companies or labour organisations that operate apprenticeship programmes). Unlike indicators B2 and B3, this indicator also includes public subsides that are not attributable to household payments for educational institutions, such as subsidies for student living costs.

Countries differ in the ways in which they use public money for education. Public funds may flow directly to schools or be channelled to institutions via households; they may also be restricted to the purchase of educational services or be used to support student living costs.

It is important to examine public investment in education in conjunction with private investment, as shown in indicator B3.

Overall level of public resources invested in education

On average, OECD countries devote 12.9 per cent of total government expenditure to education.

On average, OECD countries devote 12.9 per cent of total government expenditure to education, the values for individual countries ranging between 7 and 22 per cent. Korea, Iceland, Mexico and Norway allocate between 16 and 22 per cent of total public spending to education (Chart B4.1). Conversely, in the Czech Republic, Germany and Greece, the proportion of public expenditure spent on education is less than 10 per cent. As in the case of spending on education in relation to GDP per capita, these values need to be interpreted in the light of student demography and enrolment rates.

Between 4.6 and 16.2 per cent of total public expenditure in OECD countries is allocated to primary, secondary, and post-secondary non-tertiary education.

The public-sector proportion of the funding of the different levels of education varies widely between OECD countries. In 1998, OECD countries spent between 4.6 and 16.2 per cent of total public expenditure on primary and secondary education, and between 1.6 and 5.6 per cent on tertiary education. Australia, Iceland, Korea, Portugal and Switzerland spend about 10 per cent or more of total government expenditure on primary, secondary, and post-secondary non-tertiary education, and Mexico over 16 per cent. By contrast, Belgium, the Czech Republic, Germany, Greece and the Netherlands spend 7 per cent or less on education below the tertiary level (Table B4.1).

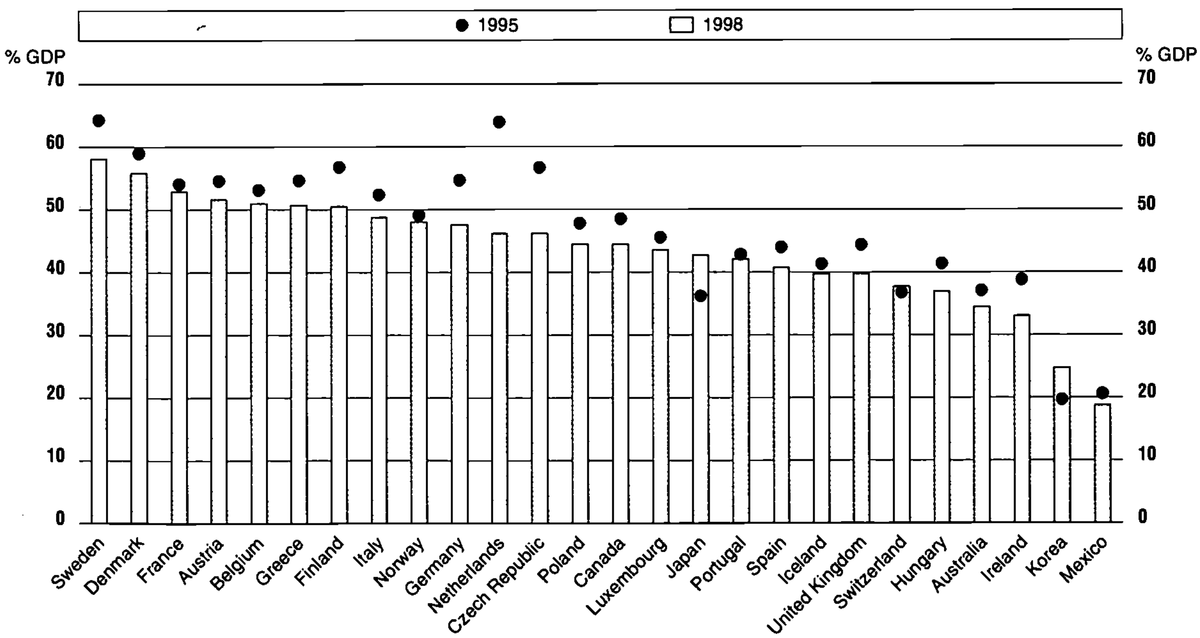
Public funding of education is a social priority, even in countries with little public involvement in other areas.

When public expenditure on education is examined as a proportion of total governmental spending, the relative sizes of public budgets (as measured by public spending in relation to GDP) need to be taken into account.

In countries where public spending is low relative to overall GDP, such as Australia, Ireland, Korea and Mexico, the proportion of public expenditure devoted to education is relatively high. However, in the remaining OECD countries, where public spending accounts for over 35 per cent of GDP, there seems to be no relation between the size of the public budget and how much of it is spent on education (Charts B4.1 and B4.2).

Sweden, the country with the highest proportion of GDP spent by government, spends the same high proportion of public budgets on education as does Portugal, a country with a relatively small public sector. Norway spends the highest proportion of public budgets of all OECD countries on education, and Italy the second lowest, but in both countries, public spending accounts for 48 per cent of GDP (Chart B4.2).

Chart B4.2. **Total public expenditure as a percentage of GDP (1995, 1998)**



Countries are ranked in descending order of the total public expenditure as a percentage of GDP in 1998.

Source: OECD. Annex 2.

Changes in public educational expenditure between 1995 and 1998

Between 1995 and 1998, public expenditure increased by more than 5 per cent in two out of three OECD countries.

Spending on education in relation to total public spending provides an indication of the perceived value of education relative to that of other public investments. It is therefore useful to examine changes in public spending on education in conjunction with changes in other public sectors and in relation to the overall economic resources available to a country.

In 13 out of 18 countries with comparable trend data, public educational budgets grew by over 5 per cent between 1995 and 1998, and in Denmark, Greece, Ireland, Poland and Portugal by more than 15 per cent. In Italy and the Netherlands, public spending on education grew despite a decrease in total government spending. Only the Czech Republic showed a significant decrease, of 10 per cent, in public spending on education (Chart B4.3).

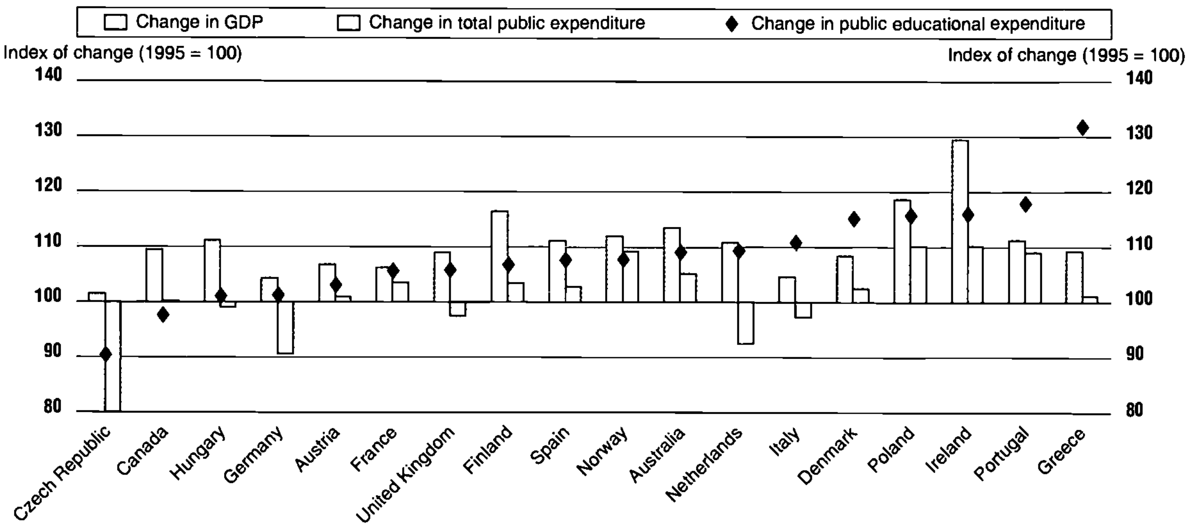
Typically, public expenditure on education grew faster than total government spending, but not as fast as national income.

The process of budget consolidation puts pressure on education as on every other service. Nevertheless, with the exception of Canada and the Czech Republic, spending on education grew faster than spending in other public areas, the proportion of public budgets spent on education growing, on average, from 11.9 per cent in 1995 to 12.7 per cent in 1998. In Denmark, the education share of public spending increased from 13.1 per cent in 1995 to 14.8 per cent in 1998, in Italy from 8.7 to 10.0 per cent and in the Netherlands, from 9.1 to 10.6 per cent.

However, between 1995 and 1998, national income grew faster than government spending on education in all OECD countries except Korea (Chart B4.2, B4.3).

Chart B4.3. **Change in public expenditure on education (1998)**

Index of change of public expenditure on public and private educational institutions in comparison to total public expenditure (1995 = 100)



Countries are ranked in ascending order of the change in public expenditure on public and private educational institutions.

Source: OECD. Table B2.2, Annex 2.

DEFINITIONS AND METHODOLOGIES

Data refer to the financial year **1998** *and are based on the* **UOE** *data collection on educational statistics administered in* **2000** *(for details see* **Annex 3**).

Educational expenditure is expressed as a percentage of a country's total public sector expenditure and as a percentage of GDP. Public educational expenditure includes expenditure on educational institutions as well as subsidies for students' living costs and for other private expenditure outside institutions. Public expenditure on education includes expenditure by all public entities, including ministries other than the ministry of education, local and regional governments and other public agencies.

B4

Total public expenditure, also referred to as total government spending, corresponds to the non-repayable current and capital expenditure of all levels of government, central, regional and local. Current expenditure includes final consumption expenditure, property income paid, subsidies and other current transfers (*e.g.*, social security, social assistance, pensions and other welfare benefits). Figures for total public expenditure have been taken from the OECD National Accounts Database (see Annex 2) and use the System of National Accounts 1993. In previous editions of Education at a Glance, total public expenditure was based on the old System of National Accounts 1968. The change in the system of national accounts may explain differences in this indicator in comparison with previous editions.

The country mean is calculated as the simple average across all countries for which data are available.

Table B4.1. Total public expenditure on education

Direct public expenditure on educational institutions **plus** *public subsidies to the private sector (including subsidies for living costs, and other private entities) as a percentage of* GDP *and as a percentage of total public expenditure, by level of education and year*

	Public expenditure on education as a percentage of **total public expenditure**				Public expenditure[1] on education as a percentage of **GDP**			
	1998			1995	1998			1995
	Primary, secondary and post-secondary non-tertiary education	Tertiary education	All levels of education combined	All levels of education combined	Primary, secondary and post-secondary non-tertiary education	Tertiary education	All levels of education combined	All levels of education combined
OECD countries								
Australia	10.2	3.6	13.9	13.4	3.5	1.2	4.8	5.0
Austria	7.8	3.2	12.2	12.0	4.0	1.6	6.3	6.5
Belgium	6.9	2.2	10.2	m	3.5	1.1	5.2	m
Belgium (Fl.)	m	m	m	m	3.4	1.0	5.0	5.2
Canada	8.2	3.9	12.6	12.9	3.7	1.8	5.7	6.5
Czech Republic	6.3	1.8	9.3	8.7	2.9	0.8	4.3	4.9
Denmark	8.8	3.9	14.8	13.1	4.9	2.2	8.3	7.7
Finland	7.6	4.0	12.4	12.1	3.8	2.0	6.2	6.9
France	7.9	2.0	11.3	11.1	4.2	1.0	6.0	6.0
Germany	6.3	2.3	9.8	8.6	3.0	1.1	4.6	4.7
Greece	4.6	2.1	6.9	5.2	2.3	1.1	3.5	2.9
Hungary	7.8	2.4	12.4	12.2	2.9	0.9	4.6	5.0
Iceland	10.8	5.6	17.8	m	4.3	2.2	7.1	m
Ireland	9.9	3.5	13.5	13.0	3.3	1.1	4.5	5.1
Italy	7.1	1.6	10.0	8.7	3.5	0.8	4.9	4.6
Japan*	m	m	m	m	2.8	0.4	3.5	m
Korea	12.7	1.8	16.5	m	3.1	0.4	4.1	m
Luxembourg	m	m	m	m	m	m	m	m
Mexico	16.2	4.5	22.4	22.4	3.0	0.8	4.2	4.6
Netherlands	6.8	3.0	10.6	9.1	3.1	1.4	4.9	5.0
New Zealand	m	m	m	m	4.9	1.8	7.2	5.7
Norway	9.7	4.2	16.1	18.4	4.6	2.0	7.7	9.1
Poland	7.8	2.7	12.2	11.5	3.5	1.2	5.4	5.5
Portugal	10.2	2.4	13.5	12.5	4.3	1.0	5.7	5.4
Spain	8.1	2.2	11.1	10.6	3.3	0.9	4.5	4.7
Sweden	9.1	3.6	13.7	m	5.3	2.1	8.0	m
Switzerland	10.8	3.0	14.6	m	4.1	1.1	5.5	m
Turkey	m	m	m	m	1.8	0.8	3.0	2.4
United Kingdom	8.3	2.6	11.9	11.2	3.4	1.1	4.9	5.2
United States[2]	m	m	m	m	3.4	1.3	5.1	m
Country mean	**8.7**	**3.0**	**12.9**	**11.9**	**3.6**	**1.3**	**5.3**	**5.4**
WEI participants								
Argentina	m	m	m	m	2.8	0.9	4.1	m
Brazil[4]	7.9	2.9	12.0	m	3.1	1.1	4.7	m
Chile	12.1	2.7	16.1	m	2.7	0.6	3.6	m
India[2]	m	m	m	m	2.0	m	m	m
Indonesia[5]	5.7	1.2	6.9	m	1.2	0.3	1.5	m
Jordan	m	m	m	m	4.1	m	m	m
Malaysia	8.9	4.4	14.0	m	3.0	1.5	4.8	m
Paraguay	15.8	4.4	20.2	m	3.5	1.0	4.5	m
Peru	15.7	4.6	22.5	m	2.0	0.6	2.9	m
Philippines[4]	16.2	2.9	19.7	m	2.9	0.5	3.5	m
Thailand	14.6	6.6	27.2	m	2.5	1.1	4.7	m
Tunisia[5]	m	m	m	m	5.4	1.5	6.8	m
Uruguay	8.5	2.6	12.2	m	1.9	0.6	2.7	m
Zimbabwe[2]	m	m	m	m	9.2	1.6	10.8	m

1. Public expenditure presented in this table include public subsidies to households for living costs, which are not spent on educational institutions. Thus the figures presented here exceed those on public spending on institutions found in Table B2.1.
2. Post-secondary non-tertiary is included in tertiary education and exluded from primary, secondary and post-secondary non-tertiary education.
3. Public subsidies to the private sector are excluded.
4. Year of reference 1997.
5. Year of reference 1999.
* See Annex 3 for notes.

Source: OECD.

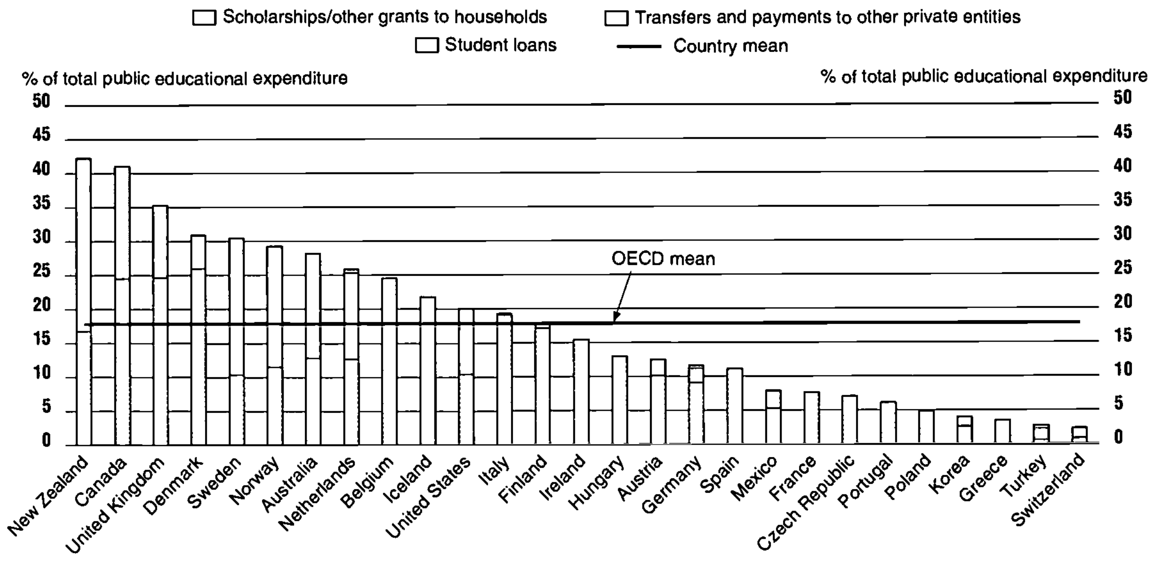
SUPPORT FOR STUDENTS AND HOUSEHOLDS THROUGH PUBLIC SUBSIDIES

B5

- An average of 18 per cent of public spending on tertiary education is devoted to supporting students, households and other private entities. In Canada, New Zealand and the United Kingdom, public subsidies account for a third or more of public tertiary education budgets.
- Subsidies are particularly important in systems where students are expected to pay at least part of the cost of their education.
- In most countries, the beneficiaries of subsidies have considerable discretion regarding the spending of public subsidies. In all reporting countries, subsidies are spent mainly outside educational institutions, and in one out of three countries exclusively outside.

Chart B5.1. **Public subsidies at the tertiary level (1998)**

Public subsidies to the private sector as a percentage of total government expenditure on education, by type of subsidy



Countries are ranked in descending order of total public subsidies for tertiary education.

Source: OECD. Table B5.2.

POLICY CONTEXT

This indicator examines direct and indirect public spending on educational institutions as well as public subsidies to households for student living costs.

Through subsidies to students and their families, governments can encourage participation in education, particularly among students from low-income families, by covering part of the cost of education and related expenses. Furthermore, public subsidies play an important role in indirectly financing educational institutions.

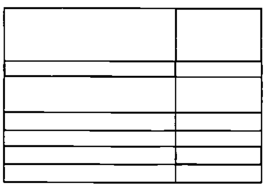
Channelling funding for institutions through students may also help to increase competition between institutions and result in greater efficiency in the financing of education. Since aid for student living costs can serve as a substitute for work as a financial resource, public subsidies may enhance educational attainment by enabling students to study full-time and to work fewer hours or not at all.

Public subsidies come in many forms: as means-based subsidies, as family allowances for all students, as tax allowances for students or their parents, or as other household transfers. Unconditional subsidies such as tax reductions or family allowances may provide less of an incentive for low-income students to participate in education than means-tested subsidies. However, they may still help to reduce disparities between households with and without children in education.

A key question is whether financial subsidies for households should be provided in the form of grants or loans. Do loans help to increase the effectiveness of financial resources invested in education and shift some of the cost of education to the beneficiaries of educational investment? Or are student loans less effective than grants in encouraging low-income students to pursue their education?

EVIDENCE AND EXPLANATIONS

What the indicator covers and what it does not cover



Coverage diagram
(see page 55 for explanations)

This indicator shows the proportion of public spending on education that is transferred to students, families and other private entities. Some of these funds are spent indirectly on educational institutions, as when subsidies are used to cover tuition fees. Other subsides for education do not relate to educational institutions, such as subsidies for student living costs.

The indicator distinguishes between scholarships and grants, which are non-repayable subsidies, and loans. The indicator does not, however, distinguish between different types of grants or loans, such as scholarships versus family allowances and subsidies in kind.

Governments can also support students and their families by providing tax reductions and tax credits. These types of subsidy are not covered by this indicator.

It is also common for governments to guarantee the repayment of loans to students made by private lenders. In some countries, this indirect form of subsidy is as significant as, or more significant than, direct financial aid to students. However, for reasons of comparability, the indicator only takes into account public transfers to private entities relating to private loans, not the total value of loans generated.

In the case of student loans, the indicator reports the full volume of loans in order to provide information on the level of support which current students receive. The indicator does not take repayments into account, even though these can reduce the real costs of loans substantially.

Public subsidies as a proportion of total public expenditure on education

OECD countries spend an average of 0.4 per cent of their GDP on public subsidies to households and other private entities.

OECD countries spend an average of 0.4 per cent of their GDP on public subsidies to households and other private entities. In Denmark, New Zealand and Sweden, this figure is more than 1 per cent of GDP. Furthermore, on average across OECD countries, 7.1 per cent of public budgets for education is spent on transfers to the private sector (Tables B4.1, B5.1 and B5.2). Most of these amounts are devoted to the tertiary level of education, except in the Czech Republic, France, Sweden and Switzerland.

At the primary and secondary levels, public subsidies account for a comparatively small proportion of public spending on education.

Most countries offer public subsidies to households from upper secondary education onwards. There are usually few subsidies available before the upper secondary level, since in most countries education up to that level is compulsory and free of charge. In 14 out of 26 countries, subsides to households and private entities therefore account for 1 per cent or less of total public spending on primary and secondary education. However, in Australia, the Czech Republic, Germany, the Netherlands, New Zealand and Norway, public subsidies account for between 5 and 10 per cent of public expenditure on primary and secondary education; and in Denmark and Sweden for 13 and 15 per cent (Chart B5.2). In most of the countries with high proportions of subsidies at the primary and secondary levels of education, these subsidies are directed at adults re-entering secondary education.

Canada, New Zealand and the United Kingdom spend a third or more of their public education budget at the tertiary level on subsidies to the private sector.

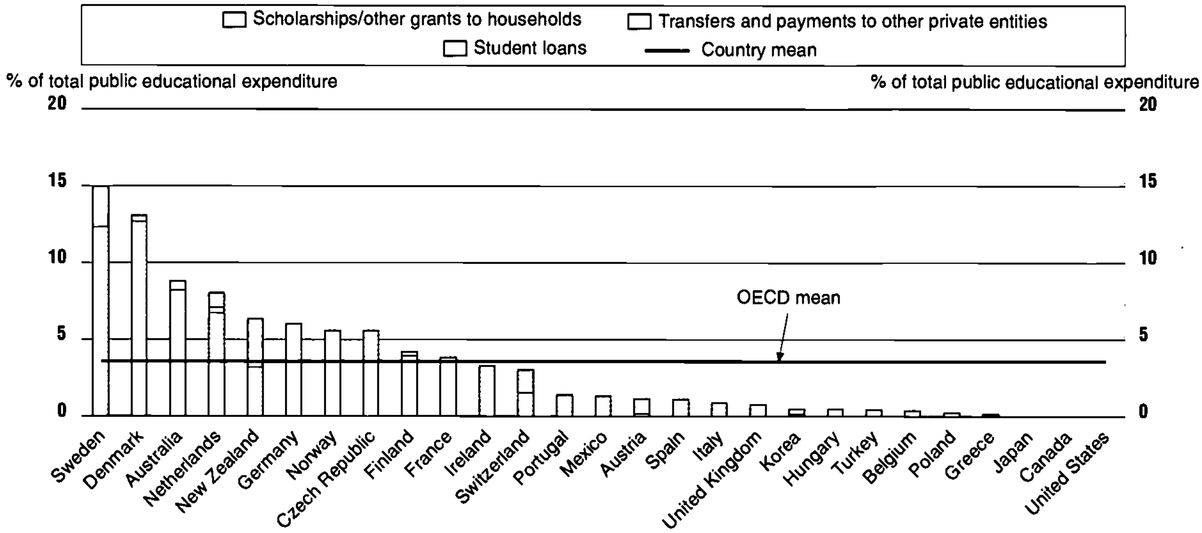
The proportion of educational budgets spent on subsidies to households and private entities is much higher at the tertiary level. OECD countries spend, on average, 18 per cent of their public budgets for tertiary education on subsidies to households and other private entities (Chart B5.1). In Canada, New Zealand and the United Kingdom, public subsidies account for more than a third of public spending on tertiary education. Only Greece, Korea, Switzerland and Turkey spend less than 5 per cent of their total public spending on tertiary education on subsidies (Table B5.1).

Countries use different mixtures of grants and loans to subsidise students' educational costs.

A key question in many countries is whether financial subsidies for households should primarily be provided in the form of grants or loans. Governments choose to subsidise students' living costs or educational costs through different mixtures of grants and loans. Advocates of student loans argue that money spent on loans goes further, that is, if the amount spent on grants were used to guarantee or subsidise loans instead, more aid would be available to students in total, and overall access would be increased. Loans also shift some of the cost of education to those who benefit most from educational investment. Opponents of loans argue that student loans will be

Chart B5.2. **Public subsidies at the primary, secondary and post-secondary non-tertiary level (1998)**

Public subsidies to the private sector as a percentage of total government expenditure on education, by type of subsidy



Countries are ranked in descending order of total public subsidies for primary, secondary and post-secondary non-tertiary education.
Source: OECD. Table B5.1.

less effective than grants in encouraging low-income students to pursue their education. They also argue that loans may be less efficient than anticipated because of the various subsidies provided to borrowers or lenders, and of the costs of administration and servicing.

Chart B5.1 presents the proportion of public educational expenditure spent on loans, grants and scholarships and other subsidies to households. Grants and scholarships include family allowances and other specific subsidies, but exclude tax reductions. Fourteen out of 26 reporting OECD countries rely exclusively on grants or scholarships. The remaining countries provide both grants or scholarships and loans to students. Iceland is the only country where only loans are provided to students. With two exceptions, the highest subsidies to students are provided by those countries which also offer student loans. Most of them spend an above-average proportion of their budgets on grants and scholarships (Chart B5.1 and Table B5.2).

Private loans are further components of financial aid to students in Australia, Canada, Finland, Germany and the United States.

In the United States, the value of private loans for students is almost as high as the total value of public subsidies to households and other private entities, and in Canada, private loans guaranteed by the government account for half of the total cost of public subsidies.

Other countries guaranteeing or subsidising private loans to students are Finland and Germany. Germany has just introduced guaranteed loans for students who are no longer eligible for public aid because they have exceeded the subsidised duration of studies.

Repayments of public loans can be a substantial source of income for governments and can decrease the costs of loan programmes significantly. The current reporting of household expenditure on education (indicator B3) does not take into account the repayment by previous recipients of public loans. These repayments can be a substantial burden to individuals and have an impact on the decision to participate in tertiary education. However, many countries make the repayment of loans dependent on the later level of income of graduates.

Repayments of loans reduce the real cost of loan programmes to the public budget; at the same time they increase the burden on households for education.

Given that repayments to loan programmes are made by former students who took out loans several years previously, it is difficult to estimate the real costs of loan programmes, net of repayments. International comparisons of total repayments and loans in the same reference period cannot be made, since they are heavily influenced by changes in schemes for the distribution of loans and by changes in the numbers of students receiving loans. Figures from an OECD special survey conducted in 1999 (and reported in the 2000 edition of *Education at a Glance*) indicate that repayments received in 1997 accounted for over 40 per cent of the total value of loans in Australia and the Netherlands, and for about 10 per cent in the United Kingdom. In Germany, repayments collected in 1997 seem to be even higher but are influenced by a change in legislation, since today's grants were in previous years given as loans. Repayments correspond to 30 per cent of the total value of loans, scholarships and other grants made in Germany in 1997.

How *subsidies are used: student living costs and tuition fees*

In most countries, the bulk of public payments to households for education are not earmarked, that is, their use is determined by the beneficiaries, namely the students and their families. In a few countries, however, public subsidies are earmarked for payments to educational institutions. Australia, Ireland, New Zealand and the United Kingdom, for example, earmark public subsidies for tuition fees. In Australia, loans and tuition fees are closely related through the Higher Education Contribution Scheme (HECS). Under HECS, students can elect to pay their contributions for their university education in advance, semester by semester, and receive a 25 per cent discount, or, they can repay their accumulated contribution through the tax system when their annual income exceeds a minimum threshold. For the purpose of the OECD education indicators, HECS is counted as a loan scheme, although students may not see the delayed payments as a loan. In countries where tuition fees are substantial, a proportion of the public subsidy to households is effectively earmarked for payments to educational institutions, even without an official policy.

In most countries, the beneficiaries of subsidies have considerable discretion regarding how they spend public subsidies.

Public subsidies are largely spent outside educational institutions. They support student living costs and educational expenses other than tuition fees. In nine out of 22 reporting countries, subsidies to households are exclusively for expenditure other than tuition fees. In Denmark, Norway and Sweden, subsidies for living costs and educational expenditure outside educational institutions account for 30 per cent of the total public spending on tertiary education. Korea, Switzerland and Turkey are the only OECD countries where subsidies for expenditure outside institutions amount to less than 1 per cent of total public spending on education.

In all reporting countries subsidies are spent mainly outside educational institutions, and in one out of three countries exclusively outside.

Subsidies are particularly important in systems where students are expected to pay at least part of the cost of their education.

In countries where students are required to pay tuition fees, access to public subsidies is of particular importance in order to provide students with access to educational opportunities, regardless of their financial situation. Indicator B3 shows what proportion of funding of educational institutions originates from private sources. In countries with low levels of private involvement in the funding of educational institutions, the level of public subsidies tends to be lower also (Tables B5.2 and B3.2).

On the other hand, in Australia, Canada and the United Kingdom, which all require the payment of tuition fees, more than 10 per cent of public expenditure on subsidies is designated to help students and households to pay for tuition fees. An exception is Korea, where despite the fact that more than 80 per cent of all expenditure on tertiary institutions originates from private sources, the level of subsidies to support tuition payments to institutions is, at 3 per cent, comparatively low (Tables B5.2 and B3.2).

DEFINITIONS AND METHODOLOGIES

Data refer to the financial year 1998 and are based on the UOE data collection on educational statistics administered in 2000 (for details see Annex 3).

Public subsidies to households include the following categories: *i)* grants/scholarships; *ii)* public student loans; *iii)* family or child allowances contingent on student status; *iv)* public subsidies in cash or kind specifically for housing, transportation, medical expenses, books and supplies, social, recreational and other purposes; *v)* interest-related subsidies for private loans.

Expenditure on student loans is reported on a gross basis – that is, without subtracting or netting out repayments or interest payments from the borrowers (students or households). This is because the gross amount of loans including scholarships and grants is the relevant variable for measuring financial aid to current participants in education.

Public costs related to private loans guaranteed by governments are included as subsidies to other private entities. Unlike public loans, only the net cost of these loans is included.

The value of tax reductions or credits to households and students is not included.

Table B5.1. **Public subsidies to the private sector as a percentage of total government expenditure on education and GDP for primary, secondary and post-secondary non-tertiary education (1998)**

Direct expenditure for institutions and transfers to households and other private entities as a percentage of total government expenditure and GDP

	Direct expenditure for institutions	Transfers for education to private entities: Financial aid to students: Scholarships/ other grants to households	Student loans	Total	Transfers and payments to other private entities	Total	Transfers for education to private entities as percentage of GDP
OECD countries							
Australia	91	8	n	8	1	9	0.31
Austria	99	n	a	n	1	1	0.05
Belgium	100	n	n	n	n	n	0.01
Canada*	m	m	m	m	m	m	x
Czech Republic*	94	6	a	6	n	6	0.16
Denmark*	87	13	n	13	n	13	0.64
Finland	96	4	n	4	n	4	0.16
France	96	4	a	4	a	4	0.16
Germany*	94	6	n	6	n	6	0.18
Greece[1]	100	n	m	n	m	n	n.
Hungary	100	n	a	n	n	n	0.01
Iceland	99	n	1	1	n	1	0.06
Ireland*	97	3	n	3	n	3	0.11
Italy	99	1	a	1	n	1	0.03
Japan	m	a	m	m	n	m	m
Korea	100	n	n	n	n	n	0.02
Luxembourg	m	m	m	m	m	m	m
Mexico	99	1	a	1	n	1	0.04
Netherlands	92	7	n	7	1	8	0.25
New Zealand	94	3	3	6	a	6	0.31
Norway	94	4	2	6	x	6	0.26
Poland	100	n	a	n	a	n	0.01
Portugal	99	1	a	1	a	1	0.06
Spain	99	1	n	1	n	1	0.04
Sweden	85	12	3	15	a	15	0.80
Switzerland*	97	2	n	2	1	3	0.12
Turkey	100	n	a	n	m	n	0.01
United Kingdom	99	1	a	1	n	1	0.03
United States[1]	100	n	n	n	n	n	x
Country mean	**96**	**3**	**n**	**3**	**n**	**4**	**0.15**
WEI participants							
Argentina	99	1	a	1	n	1	0.02
Brazil[2]	100	n	n	n	a	n	0.00
Chile	100	n	a	n	a	n	0.01
India[1]	100	n	n	n	n	n	0.00
Indonesia[3]	93	7	m	7	m	7	0.08
Israel	99	1	n	1	n	1	0.07
Malaysia	100	n	n	n	m	n	0.01
Paraguay[1]	100	n	a	n	a	n	0.00
Peru	100	a	a	a	a	a	a
Thailand	95	m	5	5	m	5	0.13
Zimbabwe[1]	100	n	n	n	n	n	x

1. Excluding post-secondary non-tertiary education.
2. Year of reference 1997.
3. Year of reference 1999.
* See Annex 3 for notes.

Source: OECD.

B5

Table B5.2. **Public subsidies to the private sector as a percentage of total government expenditure on education and GDP for tertiary education (1998)**

Direct expenditure for institutions and transfers to households and other private entities as a percentage of total government expenditure and GDP

	Direct expenditure for institutions	Transfers for education to private entities						Transfers for education to private entities as percentage of GDP
		Financial aid to students				Transfers and payments to other private entities	Total	
		Scholarships/ other grants to households	Student loans	Total	*of which:* attributable for educational institutions			
OECD countries								
Australia	72	13	15	28	15	n	28	0.35
Austria	88	10	a	10	x	2	12	0.21
Belgium	77	23	n	23	4	n	23	0.26
Canada	59	18	7	24	11	17	41	0.74
Czech Republic	93	7	a	7	n	n	7	0.06
Denmark	69	26	5	31	n	n	31	0.67
Finland	82	17	n	17	n	1	18	0.36
France	92	8	a	8	5	a	8	0.08
Germany	88	9	2	11	n	n	12	0.13
Greece	97	3	m	3	m	m	3	0.04
Hungary	87	13	a	13	3	n	13	0.12
Iceland	78	n	22	22	x	n	22	0.49
Ireland	85	15	n	15	6	n	15	0.18
Italy	81	19	n	19	7	n	19	0.15
Japan	m	a	m	m	m	n	m	m
Korea	96	3	n	3	3	1	4	0.02
Luxembourg	m	m	m	m	m	m	m	m
Mexico	92	5	3	8	n	n	8	0.07
Netherlands	74	13	13	25	8	1	26	0.36
New Zealand	58	17	26	42	x	a	42	0.78
Norway	71	12	18	29	n	n	29	0.59
Poland	95	5	a	5	x	a	5	0.06
Portugal	94	6	a	6	n	n	6	0.06
Spain	89	11	n	11	5	n	11	0.10
Sweden	70	10	20	30	n	a	30	0.64
Switzerland	98	1	n	1	n	1	2	0.03
Turkey	97	n	2	2	2	n	3	0.02
United Kingdom	65	25	11	35	13	n	35	0.39
United States[1]	80	11	9	20	x	m	20	0.27
Country mean	**82**	**12**	**5**	**17**	**4**	**1**	**18**	**0.27**
WEI participants								
Argentina	99	n	n	n	x	1	1	0.01
Brazil[2]	94	5	1	6	x	n	6	0.07
Chile	76	11	13	24	21	a	24	0.14
Israel	90	8	2	10	10	n	10	0.14
Malaysia	83	10	6	17	x	m	17	0.25
Paraguay[1]	99	1	a	1	x	a	1	0.01
Peru	100	n	n	n	n	n	n	n
Philippines[3]	97	3	n	3	x	m	3	0.02
Thailand	74	n	26	26	x	m	26	0.29
Zimbabwe	87	4	9	13	x	n	13	0.23

1. Including post-secondary non-tertiary education.
2. Year of reference 1997.
3. Year of reference 1999.
* See Annex 3 for notes.

Source: OECD.

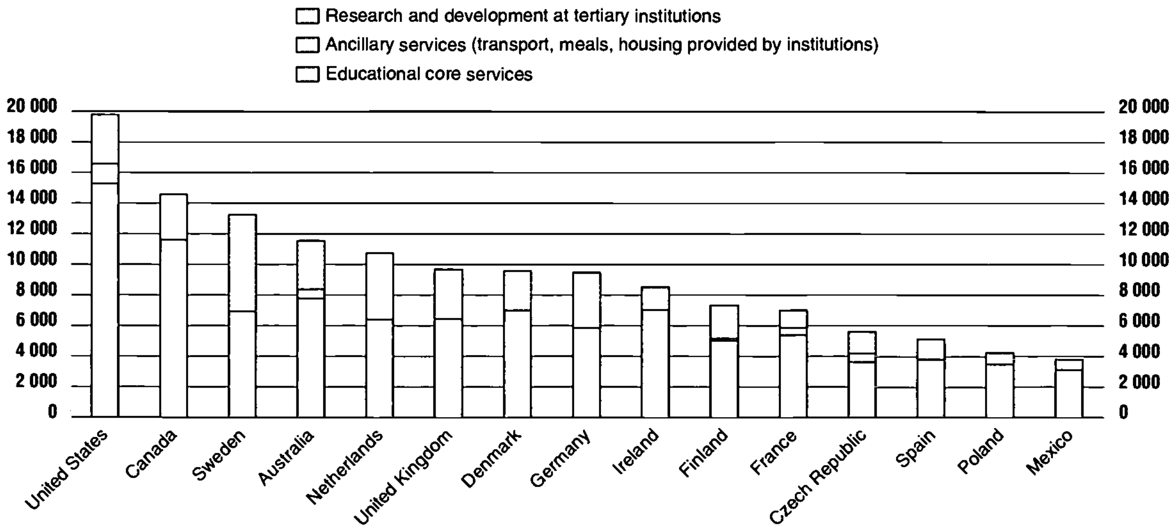
EXPENDITURE ON INSTITUTIONS BY SERVICE CATEGORY AND BY RESOURCE CATEGORY

B6

- On average, one quarter of expenditure on tertiary education is attributable to R&D at tertiary education institutions. Significant differences between countries in the emphasis on R&D in tertiary institutions can explain part of the large differences in expenditure per tertiary student.
- Expenditure on ancillary services at primary, secondary, and post-secondary non-tertiary levels represents 5 per cent of total spending on educational institutions, which is usually more than countries spend on subsidies to households.
- In primary, secondary, and post-secondary non-tertiary education combined, current expenditure accounts, on average across all OECD countries, for 92 per cent of total spending.
- In all but four countries, 75 per cent or more of current expenditure is spent on staff salaries.
- At the tertiary level, countries tend to devote a higher proportion of current expenditure to services which are sub-contracted or bought in.

Chart B6.1. **Expenditure per student on instruction, research and development (R&D) and ancillary services, tertiary education (1998)**

Annual expenditure per student (in equivalent US dollars converted using PPPs), by function, public and private institutions



Countries are ranked in descending order of total expenditure per student in tertiary education.
Source: OECD. Table B6.3.

POLICY CONTEXT

This indicator compares countries with respect to the division of spending between current and capital expenditure and the distribution of current expenditure by resource category.

How spending is apportioned between different categories of expenditure can affect the quality of instruction (*e.g.*, through teachers' salaries), the condition of educational facilities (*e.g.*, school maintenance) and the ability of the education system to adjust to changing demographic and enrolment trends (as in the construction of new schools).

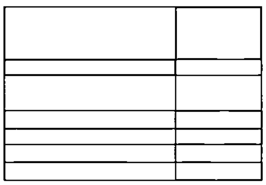
Comparisons of how different countries apportion educational expenditure between the various resource categories can provide some insight into variation in the organisation and operation of educational institutions. Decisions on the allocation of resources made at the system level, both budgetary and structural, eventually feed through to the classroom and affect the nature of instruction and the conditions under which it is provided.

It also compares how spending is distributed between different functions of educational institutions.

Educational institutions offer a range of educational services besides instruction. At the primary and secondary levels of education, institutions may offer meals, free transport to and from school or boarding facilities. At the tertiary level, institutions may offer housing and often perform a wide range of research activities as an integral part of tertiary education.

EVIDENCE AND EXPLANATIONS

What this indicator covers and what it does not cover



Coverage diagram *(see page 55 for explanations)*

This indicator breaks down educational expenditure by current and capital expenditure and the three main functions which educational institutions typically fulfil. This includes, first, costs directly attributable to instruction, such as teachers' salaries or school materials, and costs indirectly related to the provision of instruction, such as expenditure on administration, instructional support services, development of teacher, student counselling, or on the construction and/or provision of school facilities. Second, it includes spending on ancillary services, such as student welfare services provided by educational institutions. Third, it includes spending attributable to research and development (R&D) performed at tertiary education institutions, either in the form of separately funded R&D activities or in the form of those proportions of salaries and current expenditure in general education budgets that are attributable to the research activities of staff.

The indicator does not include public and private R&D spending outside educational institutions, such as R&D spending in industry. A comparative review of R&D spending in sectors other than education is provided in the OECD Science and Technology Indicators. Expenditure on student welfare services at educational institutions only includes public subsidies for those services. Expenditure by students and their families on services that are provided by institutions on a self-funding basis are not included.

Current and capital expenditure, and the distribution of current expenditure by resource category

Educational expenditure can first be divided into current and capital expenditure. Capital expenditure comprises spending on assets that last longer than one year and includes spending on the construction, renovation and major repair of buildings. Current expenditure comprises spending on school resources used each year for the operation of schools.

Current expenditure can be further sub-divided into three broad functional categories: compensation of teachers, compensation of other staff, and other current expenditure (on, for example, teaching materials and supplies, maintenance of school buildings, preparation of student meals and renting of school facilities). The amount allocated to each of these functional categories will depend in part on current and projected changes in enrolment, on the salaries of educational personnel and on costs of maintenance and construction of educational facilities.

Education takes place mostly in school and university settings. The labour-intensive technology of education explains the large proportion of current spending within total educational expenditure. In primary, secondary, and post-secondary non-tertiary education combined, current expenditure accounts, on average across all OECD countries, for 92 per cent of total spending.

There is some noticeable variation between countries with respect to the relative proportions of current and capital expenditure: at the primary, secondary and post-secondary non-tertiary levels combined, the proportion of current expenditure ranges from less than 85 per cent in Korea and Turkey to 97 per cent or more in Canada and Belgium (Chart B6.2).

In all except four countries, 75 per cent or more of current expenditure at the primary, secondary and post-secondary non-tertiary levels is spent on staff salaries.

The salaries of teachers and other staff employed in education account for the largest proportion of current expenditure in OECD countries. On average across OECD countries, expenditure on the compensation of educational personnel accounts for 80 per cent of current expenditure at the primary, secondary and post-secondary non-tertiary levels of education combined. Although 70 per cent or less of expenditure in the Czech Republic, Finland, Sweden and the United Kingdom is devoted to the compensation of educational personnel, the proportion is 90 per cent or more in Mexico, Portugal, and Turkey (Chart B6.2).

OECD countries with smaller education budgets invest relatively more in personnel and less in other services.

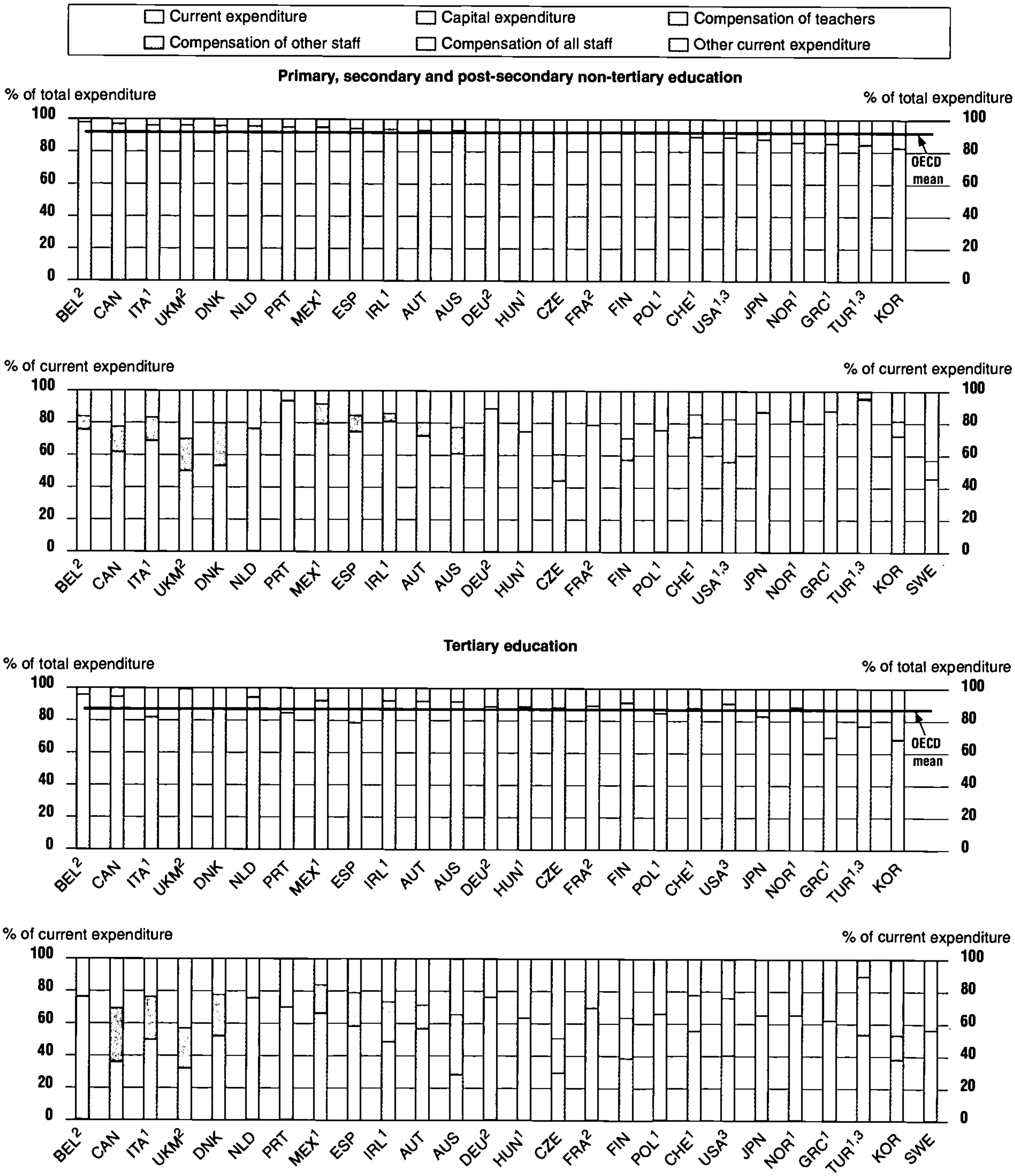
OECD countries with relatively small education budgets (Mexico, Portugal and Turkey, for example) tend to devote a larger proportion of current educational expenditure to the compensation of personnel and a smaller proportion to services which are sub-contracted or bought in, such as support services (*e.g.*, maintenance of school buildings), ancillary services (*e.g.*, preparation of meals for students) and renting of school buildings and other facilities.

Countries vary in the proportions of current expenditure which they allocate to the compensation of teachers and other staff.

In Denmark and the United States, around one third of staff expenditure in primary, secondary and post-secondary non-tertiary education combined goes towards compensation of non-teaching staff, while in Ireland and Turkey this figure is 5 per cent or less. These differences are likely to reflect the degree to which educational personnel specialise in non-teaching activities in a particular country (for example, principals who do not teach, guidance counsellors, bus drivers, school nurses, janitors and maintenance workers) (see indicator D2), as well as the relative salaries of teaching and non-teaching personnel (see indicator D1) (Table D6.1).

Chart B6.2. **Distribution of capital and current expenditure (1998)**

Distribution of total expenditure and distribution of current expenditure on public and private institutions, by resource category and level of education



1. Public institutions.
2. Public and government-dependent private institutions.
3. Excluding post-secondary non-tertiary education.

Countries are ranked in descending order of the current expenditure on primary, secondary and post-secondary non-tertiary education.

Source: OECD. Table B6.1.

At the tertiary level, the proportion of total expenditure spent on capital outlays is larger than at the primary, secondary and post-secondary non-tertiary levels. In 15 out of 25 OECD countries, the proportion spent on capital expenditure at the tertiary level is 10 per cent or more, and in Greece, Korea, Spain and Turkey it is above 20 per cent (Chart B6.2).

At the tertiary level, the proportion of capital expenditure is generally larger, because of more differentiated and advanced teaching facilities.

Differences are likely to reflect differences in how tertiary education is organised in each country, as well as the degree to which expansion in enrolments requires the construction of new buildings.

OECD countries, on average, spend 30 per cent of current expenditure at the tertiary level on purposes other than the compensation of educational personnel. This is explained by the much higher cost of facilities and equipment in higher education (Chart B6.2).

Expenditure on instruction, R&D and ancillary services

While educational expenditure is dominated below the tertiary level by spending on instructional services, at the tertiary level, other services, particularly those related to R&D activities, can account for a significant proportion of educational spending. Differences between countries in expenditure on R&D activities can therefore explain a significant part of the differences between countries in overall educational expenditure per tertiary student (Chart B6.1). High levels of R&D spending in tertiary education institutions in Australia, Denmark, Finland, Germany, the Netherlands and Sweden (between 0.40 and 0.83 of GDP), for example, imply that spending per student in these countries would be considerably lower if the R&D component were excluded (Table B6.2).

Significant differences among countries in the emphasis on R&D in tertiary institutions can explain part of the large differences in expenditure per tertiary student.

R&D spending in tertiary education institutions not only depends on overall R&D expenditure in a country, but also on the national infrastructure for R&D activities. Countries in which most R&D is performed by tertiary education institutions tend to report higher expenditure per tertiary student than countries in which a large part of R&D is performed in other public institutions or by industry.

Student welfare services and, sometimes, services for the general public, are integral functions of schools and universities in many countries. Countries finance these ancillary services with different combinations of public expenditure, public subsidies and fees paid by students and their families.

Student welfare services are integral functions of schools and universities.

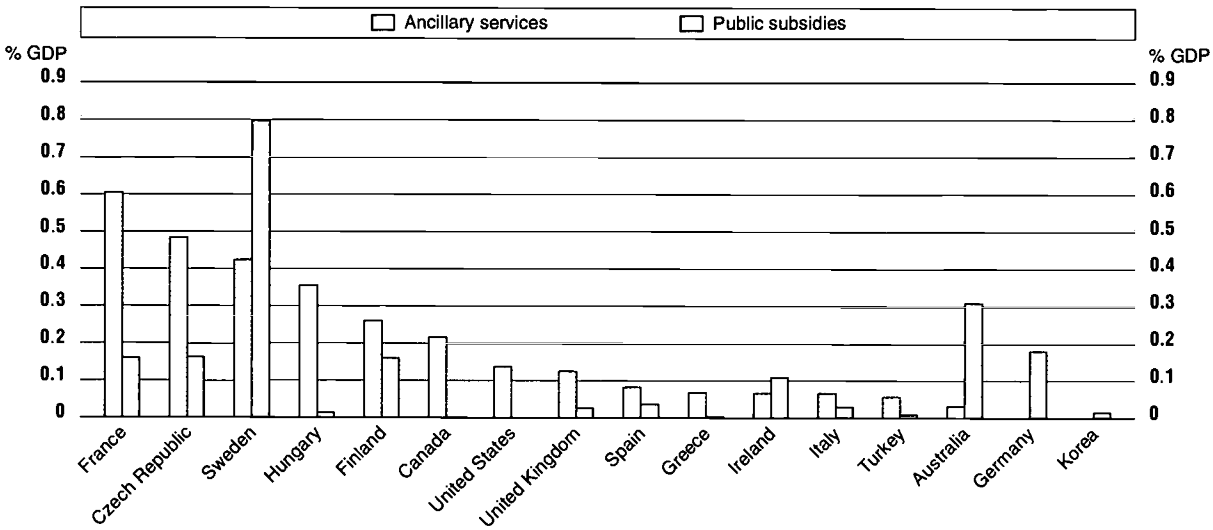
On average, countries spend 0.18 per cent of their GDP on subsidies for ancillary services provided by primary, secondary and post-secondary non-tertiary institutions. This represents 5 per cent of total spending on these institutions. At the high end, the Czech Republic, France, Hungary and Sweden spend around 10 per cent on ancillary services, which translates into more than 500US$ (PPP) per student in France and Sweden and more than 250US$ (PPP) per student in Canada, the Czech Republic, Finland and Hungary (Chart B6.3).

Expenditure on ancillary services at primary, secondary, and post-secondary non-tertiary levels represents 5 per cent of total spending on educational institutions.

In more than two thirds of countries, the amount spent on ancillary services is higher than the amount spent on subsidies to households at the

Chart B6.3. **Subsidies for ancillary services and public subsidies to households at primary, secondary and post-secondary non-tertiary education (1998)**

Expenditure on ancillary services provided by public and private educational institutions and public subsidies to households as a percentage of GDP



Countries are ranked in descending order of expenditure on ancillary services provided by educational institutions as a percentage of GDP.
Source: OECD. Tables B5.1, B6.2.

primary, secondary and post-secondary non-tertiary levels. Exceptions to this pattern are Australia, Germany, Ireland and Sweden, where expenditure on subsidies to households is higher (Chart B6.3).

On average, expenditure on subsidies for ancillary services at the tertiary level amounts to just 0.04 per cent of GDP. Nevertheless, on a per student-basis this can translate into significant amounts, as in Australia, the Czech Republic, France and Hungary, where subsides for ancillary services amount to over 450US$ (PPP). At the tertiary level, ancillary services are more often provided on a self-financed basis. In the United States, for example, fees paid to institutions for ancillary services account for 0.15 per cent of GDP.

DEFINITIONS AND METHODOLOGIES

Data refer to the financial year 1998 and are based on the UOE data collection on educational statistics administered in 2000 (for details see Annex 3).

The distinction between current and capital expenditures is the standard one used in national income accounting. Current expenditure refers to goods and services consumed within the current year, and must be made recurrently in order to sustain the production of educational services. Capital expenditure refers to assets which last longer than one year, including spending on construction, renovation or major repair of buildings and on new or replacement equipment. The capital expenditure reported here represents the value of educational capital acquired or created during the year in question – that is, the amount of capital formation – regardless of whether the capital expenditure was financed from current revenue or by borrowing. Neither current nor capital expenditure includes debt servicing.

Calculations cover expenditure by public institutions or, where available, that of public and private institutions combined.

Current expenditure other than on the compensation of personnel includes expenditure on services which are sub-contracted or bought in, such as support services (*e.g.*, maintenance of school buildings), ancillary services (*e.g.*, preparation of meals for students) and renting of school buildings and other facilities. These services are obtained from outside providers (unlike the services provided by the education authorities or educational institutions themselves using their own personnel).

Expenditure on R&D includes all expenditure on research performed at universities and other tertiary education institutions, regardless of whether the research is financed from general institutional funds or through separate grants or contracts from public or private sponsors. The classification of expenditure is based on data collected from the institutions carrying out R&D rather than on the sources of funds.

"Ancillary services" are services provided by educational institutions that are peripheral to the main educational mission. The two main components of ancillary services are student welfare services and services for the general public. At primary, secondary, and post-secondary non-tertiary levels, student welfare services include meals, school health services, and transportation to and from school. At the tertiary level, they include halls of residence (dormitories), dining halls, and health care. Services for the general public include museums, radio and television broadcasting, sports, and recreational and cultural programmes. Expenditure on ancillary services also include fees from students or households are excluded.

Core instructional services are estimated as the residual of all expenditure, *i.e.* total expenditure on educational institutions net of expenditure on R&D and ancillary services.

Table B6.1. **Educational expenditure by resource category (1998)**

Distribution of total and current expenditure on educational institutions, by resource category and level of education

	Primary, secondary and post-secondary non-tertiary education						Tertiary education					
	Percentage of total expenditure		Percentage of current expenditure				Percentage of total expenditure		Percentage of current expenditure			
	Current	Capital	Compensation of teachers	Compensation of other staff	Compensation of all staff	Other current	Current	Capital	Compensation of teachers	Compensation of other staff	Compensation of all staff	Other current
OECD countries												
Australia	93	7	61	16	77	23	91	9	29	37	65	35
Austria	93	7	72	8	80	20	92	8	57	15	71	29
Belgium (Fl.)[2]	98	2	76	8	84	16	96	4	76	8	84	16
Canada[1]	97	3	62	15	77	23	94	6	36	33	69	31
Czech Republic	92	8	44	16	61	39	88	12	30	21	51	49
Denmark	96	4	53	26	80	20	87	13	52	25	78	22
Finland	91	9	57	13	70	30	91	9	38	25	64	36
France[2]	92	8	x	x	79	21	89	11	x	x	70	30
Germany[2]	92	8	x	x	89	11	89	11	x	x	76	24
Greece[1]	85	15	88	x	88	12	70	30	x	x	62	38
Hungary[1,*]	92	8	x	x	75	25	88	12	x	x	64	36
Iceland[2]	m	m	m	m	m	m	m	m	m	m	m	m
Ireland[1]	94	6	81	5	86	14	92	8	48	25	73	27
Italy[1,*]	96	4	69	14	83	17	82	18	50	26	76	24
Japan[*]	88	12	x	x	87	13	83	17	x	x	65	35
Korea	83	17	72	9	81	19	68	32	38	15	53	47
Luxembourg	m	m	m	m	m	m	m	m	m	m	m	m
Mexico[1]	95	5	79	12	91	9	92	8	66	18	84	16
Netherlands	95	5	x	x	76	24	94	6	x	x	76	24
New Zealand	m	m	m	m	m	m	m	m	m	m	m	m
Norway[1]	86	14	x	x	82	18	88	12	x	x	65	35
Poland[1]	91	9	x	x	76	24	85	15	x	x	66	34
Portugal	95	5	x	x	94	6	84	16	x	x	70	30
Spain	94	6	75	10	84	16	78	22	58	20	79	21
Sweden[*]	m	m	46	11	57	43	m	m	x	x	56	44
Switzerland[1]	89	11	72	14	85	15	88	12	56	22	77	23
Turkey[1,3]	84	16	95	1	96	4	77	23	53	36	89	11
United Kingdom[2]	96	4	50	20	70	30	99	1	32	25	57	43
United States[1,3]	89	11	56	26	83	17	91	9	40	35	76	24
Country mean	**92**	**8**	**67**	**13**	**80**	**20**	**87**	**13**	**46**	**25**	**70**	**30**
WEI participants												
Argentina[1]	95	5	51	44	95	5	96	4	49	35	84	16
Brazil[1,4]	95	5	x	x	83	17	97	3	x	x	85	15
Chile[1]	91	9	x	x	61	39	m	m	m	m	m	m
India[2,3]	97	3	79	8	88	12	m	m	m	m	m	m
Indonesia[1,5]	96	4	66	4	71	29	100	m	33	14	47	53
Israel	88	12	x	x	77	23	90	10	x	x	77	23
Malaysia[1]	88	12	70	13	84	16	63	37	42	12	55	45
Paraguay[1]	93	7	72	21	93	7	83	17	7	3	10	1
Peru[1]	90	10	70	2	72	28	88	12	45	6	51	49
Philippines[1,4]	89	11	x	x	62	38	90	10	x	x	69	31
Sri Lanka[1]	m	m	m	m	m	m	73	27	36	24	60	25
Tunisia[1,5]	90	10	x	x	94	6	74	26	x	x	63	37
Uruguay[1]	92	8	70	14	84	16	93	7	64	20	84	16

1. Public institutions only.
2. Public and government-dependent private institutions only.
3. Post-secondary non-tertiary education included at the tertiary level.
4. Year of reference 1997.
5. Year of reference 1999.
* See Annex 3 for notes.

Source: OECD.

Table B6.2. Expenditure on instruction, research and development (R&D) and ancillary services in institutions as a percentage of GDP (1998)

Expenditure by service category and private expenditure on educational goods purchased outside educational institutions as a percentage of GDP

	Primary, secondary and post-secondary non-tertiary education				Tertiary education				
	Direct expenditure on educational institutions				Direct expenditure on educational institutions				
	Instructional services	Ancillary services (transport, meals, housing provided by institutions)	Total	Private payments on instructional services/goods outside educational institutions	Instructional services	Ancillary services (transport, meals, housing provided by institutions)	Research and development at tertiary institutions	Total	Private payments on instructional services/goods outside educational institutions
Australia	3.77	0.03	3.80	0.29	1.07	0.08	0.44	1.59	0.16
Austria	x	x	4.21	m	x	m	x	1.46	m
Belgium (Fl.)	3.27	0.08	3.36	0.13	0.70	0.02	0.11	0.83	0.35
Canada	3.84	0.22	4.06	0.03	1.48	n	0.38	1.85	0.50
Czech Republic	2.65	0.48	3.13	m	0.57	0.08	0.22	0.88	m
Denmark	x	x	4.34	0.64	1.12	n	0.41	1.53	0.67
Finland[4, 5]	3.40	0.26	3.66	m	1.15	0.02	0.50	1.67	m
France[5]	3.75	0.61	4.35	0.15	0.87	0.07	0.19	1.13	0.09
Germany	3.68	n	3.68	m	0.64	n	0.40	1.04	m
Greece	3.40	0.07	3.47	m	x	x	x	m	m
Hungary[1]	2.62	0.35	2.97	m	0.88	0.13	x	1.01	0.09
Iceland	m	m	m	m	m	m	m	m	m
Ireland[5]	3.21	0.07	3.28	m	1.14	n	0.24	1.38	m
Italy	3.40	0.07	3.47	0.09	x	0.02	x	0.84	0.42
Japan	x	x	3.03	m	x	x	x	1.02	m
Korea	3.95	a	3.95	m	x	a	x	2.51	m
Luxembourg	m	m	m	m		m		m	m
Mexico[5]	x	x	3.48	0.41	0.74	n	0.16	0.89	0.11
Netherlands[5]	x	x	3.06	0.22	x	x	0.39	1.18	0.29
New Zealand	m	m	4.61	m	x	x	x	m	m
Norway	x	x	4.42	x	x	x	x	1.51	n
Poland[5]	x	x	3.48	m	0.96	x	0.20	1.16	m
Portugal	x	x	4.22	m	x	x	x	1.04	m
Spain[1]	3.52	0.13	3.65	0.30	0.83	m	0.28	1.11	0.09
Sweden[3]	4.09	0.42	4.52	0.80	0.92	a	0.83	1.75	m
Switzerland	x	m	4.46	m	m	n	m	1.11	m
Turkey[1, 5]	2.28	0.06	2.33	0.01	0.74	0.08	0.02	0.84	n
United Kingdom[1]	3.28	0.13	3.40	m	0.74	a	0.37	1.11	m
United States[1, 2]	3.61	0.14	3.74	0.02	1.77	0.15	0.37	2.29	0.11
Country mean	**3.41**	**0.18**	**3.71**	**0.25**	**0.98**	**0.04**	**0.34**	**1.31**	**0.23**

1. Ancillary services in public institutions only. Other ancillary services included in instructional services.
2. Post-secondary non-tertiary is included in tertiary education and excluded from primary, secondary and post-secondary non-tertiary education.
3. Year of reference for tertiary education 1997.
4. Ancillary services include household fees for services.
5. Research and development expenditure and thus total expenditure are underestimated.

* See Annex 3 for notes.

Source: OECD.

B6

Table B6.3. **Expenditure per student on instruction, ancillary services and research and development (R&D) (1998)**

Expenditure per student in US dollars converted using PPPs, by type of service and level of education

	Primary, secondary and post-secondary non-tertiary education			Tertiary education			
	Direct expenditure on educational institutions			Direct expenditure on educational institutions			
	Instructional services	Ancillary services (transport, meals, housing provided by institutions)	Total	Instructional services	Ancillary services (transport, meals, housing provided by institutions)	Research and development	Total
Australia	4 832	40	4 873	7 778	584	3 177	11 539
Austria[1]	x	x	7 375	x	m	x	11 279
Belgium (Fl.)[2]	5 063	88	5 151	5 609	137	851	6 597
Canada	5 428	306	5 734	11 609	6	2 964	14 579
Czech Republic	2 111	384	2 495	3 632	533	1 420	5 584
Denmark	x	x	6 987	7 007	n	2 555	9 562
Finland	4 548	349	4 897	5 050	78	2 199	7 327
France	4 696	759	5 455	5 566	476	1 185	7 226
Germany	5 554	n	5 554	5 838	n	3 643	9 481
Greece[2]	2 520	50	2 569	x	x	x	4 157
Hungary	1 859	251	2 110	4 420	652	x	5 073
Iceland[1]	m	m	m	m	m	m	m
Ireland	3 224	66	3 290	7 051	n	1 471	8 522
Italy[1]	6 088	118	6 206	x	184	x	6 295
Japan	x	x	5 508	x	x	x	9 871
Korea	x	x	3 214	x	x	x	6 356
Luxembourg	m	m	m	n	m	n	m
Mexico	x	x	1 129	3 137	n	663	3 800
Netherlands	x	x	4 571	x	x	3 561	10 757
New Zealand	m	m	m	x	x	x	m
Norway[1]	x	x	7 373	x	x	x	10 918
Poland	x	x	1 476	3 524	x	738	4 262
Portugal	x	x	4 122	x	x	x	m
Spain	3 705	139	3 844	3 785	m	1 253	5 038
Sweden	5 113	530	5 643	6 947	a	6 277	13 224
Switzerland[1]	x	m	6 985	m	n	m	16 563
Turkey[1]	874	22	895	m	m	m	m
United Kingdom[2]	4 217	161	4 378	6 452	n	3 247	9 699
United States	6 459	245	6 704	15 286	1 276	3 240	19 802
Country mean	**4 008**	**213**	**4 472**	**6 465**	**258**	**2 559**	**9 107**

1. Public institutions only.
2. Public and government-dependent private institutions only.
* See Annex 3 for notes.

Source: OECD.

ACCESS TO EDUCATION, PARTICIPATION AND PROGRESSION

C

A well-educated population has become a defining characteristic of a modern society. Education is seen as a mechanism for instilling civic values, as well as a means for developing the productive and social capacity of the individual. Early childhood programmes prepare young children socially and academically for entry into primary education; primary and secondary education provide a foundation of basic skills that prepare young people to become productive members of society; and tertiary education provides a range of opportunities for individuals to gain advanced knowledge and skills, either immediately after initial schooling or later in life. In addition, many employers encourage and assist workers in upgrading or reorienting their skills in order to meet the demands of changing technologies.

Information on the expected duration of schooling and on enrolment rates at various levels of education provides a picture of the structure of different education systems, as well as of access to educational opportunities in those systems. Trends in enrolments in the various levels of education and types of educational institutions are also indicators of how the supply and demand of educational resources are balanced in different countries.

Virtually all young people in OECD countries have access to basic education for at least 11 years. But patterns of participation in and progression through education over the life cycle vary widely. As shown in **indicator C1**, both the timing and the rate of participation in the pre-school years and after the end of compulsory education differ considerably between countries. Some countries have extended participation in education, for example, by making pre-school education almost universal by the age of three, by retaining the majority of young people in education until the end of their teens, or by maintaining 10 to 20 per cent participation among all age groups up to the late 20s. Education and training beyond formal schooling are also an important component of lifelong learning, embracing individual and social development in a wide variety of institutional settings. Indicator C1 not only provides an overall picture of the formal education system, but also provides an overview of participation in continuing education and training outside the formal education system.

A range of factors, including an increased risk of unemployment and other forms of exclusion of young people with insufficient education, have strengthened the incentive for young people to stay enrolled beyond the end of compulsory education and to graduate from upper secondary education. **Indicator C2** shows that upper secondary graduation is not only becoming more and more the norm, but also that the majority of students graduate from upper secondary programmes that are designed to provide access to further tertiary education. Indicator C2 also presents graduation rates from post-secondary programmes that are at the same content level as upper secondary programmes, one alternative pathway to typically longer tertiary education.

Beyond the secondary level, a number of options exist for further education. One avenue is relatively short, vocationally-oriented programmes at the tertiary level. Another is theoretically-based programmes, which are designed to provide sufficient qualifications for entry to advanced research programmes and professions with high skill requirements. These are mainly but not exclusively taught at universities. Graduation from tertiary education programmes is generally associated with better access to employment (indicator E1) and higher earnings (indicator E5).

A set of two indicators presents some of the features of tertiary education today. **Indicator C3** presents the proportion of today's young people who enter tertiary education, and looks at the number of years spent in different forms of tertiary education over the life cycle. It shows that the expected years of study is rising rapidly. **Indicator C4** takes this further and shows that of those entering university, there is a wide variation between countries in the proportion leaving with a first qualification. It also shows some widely differing characteristics of tertiary provision.

Students with disabilities, learning difficulties and those from disadvantaged groups often receive additional support in school to enable them to make satisfactory progress. Some continue to be educated in special schools, but increasingly they are included in mainstream education. The orientation of educational policies towards lifelong learning and equity has particular significance for these students since they face the greatest risk of exclusion, not only in schools but also in the labour market and in life generally. Monitoring the educational provision that is made for these students is of great importance, especially given the substantial extra resources involved. **Indicator C5** compares the proportion of students that countries consider to have special educational needs. It also presents data on the extent of provision, its location and the distribution of students with special educational needs by gender.

There is ample evidence that more secondary and tertiary education for young people improves their individual economic and social opportunities. There is also growing evidence, albeit less direct, of a payoff for whole societies from increasing the educational attainment of the population. But as rapidly changing technology and globalisation transform the pattern of demand for skilled labour throughout the world, raising the proportion of young people who participate in upper secondary or higher education can only be part of the solution, for a number of reasons: First, an inflow of better-educated young people will only gradually change the overall educational level of the existing workforce. Second, educational attainment is only one component of human capital accumulation. Knowledge and skills continue to be acquired throughout people's lives, through experiences in families, communities and business, as well as within formal educational settings. There is a growing demand in the workplace and elsewhere for individuals who are good at using and interpreting knowledge flexibly, and who can work with others effectively. These abilities can be acquired partly through education, but must also be developed in the settings where they will be used. Strategies for developing lifelong learning opportunities must therefore look beyond mainstream educational institutions, to ensure optimal investment in human capital. **Indicator C6** brings together evidence from the International Adult Literacy Survey (1994 to 1998) and national household surveys on adult education and training, both of which provide some understanding of participation in job-related education and training among the employed.

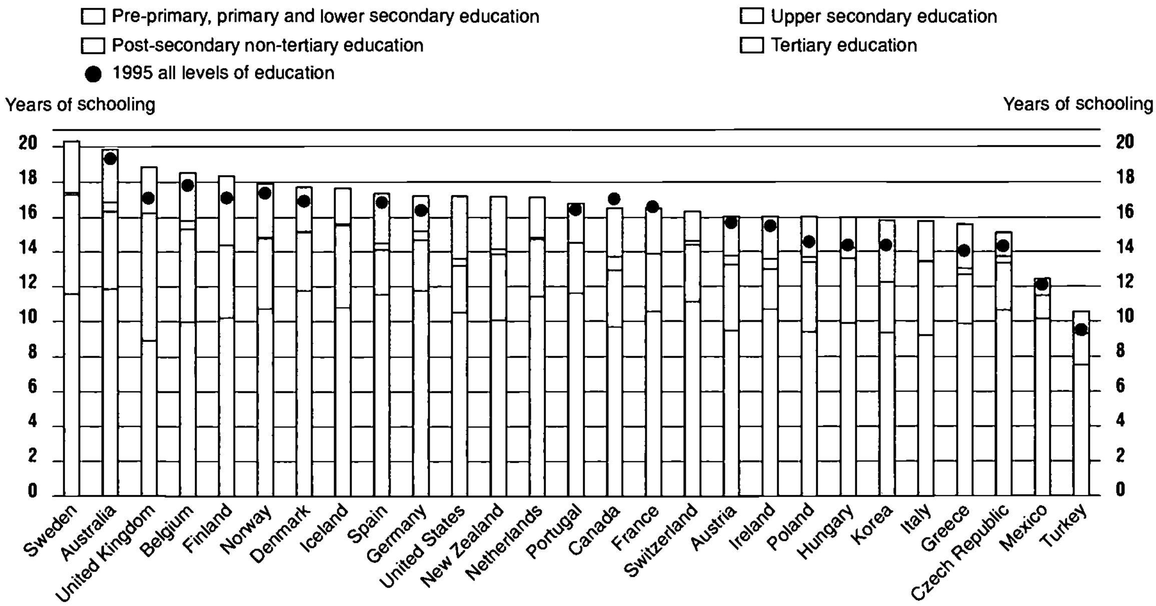
PARTICIPATION IN EDUCATION OVER THE LIFECYCLE

- In 25 out of 27 OECD countries, individuals participate in formal education for between 15 and 20 years, on average – with most of the variation coming from differences in enrolment at upper secondary education.
- School expectancy increased between 1995 and 1999 in 18 out of 20 OECD countries. In Finland, Greece, Hungary, Korea, Poland, Turkey and the United Kingdom the increase exceeded one year over this relatively short period.
- The majority of primary and secondary students are enrolled in public institutions, but enrolments in privately managed primary and secondary schools now account for 13 per cent of students, on average, and for the majority of students in Belgium and the Netherlands.
- In one third of OECD countries, over 70 per cent of three to four-year-olds are enrolled in either pre-primary or primary programmes. At the other end of the spectrum, on average, a 17-year-old in the OECD can expect to attend 2.5 years of tertiary education.
- More than one third of 25 to 44-year-olds participate in some continuing education and training in 10 out of 18 countries.
- In the majority of OECD countries, women can expect to receive more years of education than men – an additional 0.4 years, on average. However, in Korea, Turkey, Switzerland and the United States, men can expect to stay between 0.8 to 1.9 years longer in education than women.

C1

Chart C1.1. **School expectancy (1999)**

Expected years of schooling under current conditions in public and private institutions, excluding education for children under five years of age, by level of education



Countries are ranked in descending order of the total school expectancy for all levels of education in 1999.
Source: OECD. Table C1.1.

POLICY CONTEXT

This indicator examines the volume of enrolment at all levels of education, as well as participation in continuing education and training.

A well-educated population is critical for the current and future economic and social development of a country. Societies, therefore, have an intrinsic interest in ensuring broad access to a wide variety of educational opportunities for both children and adults. Early childhood programmes prepare children for primary education. They can provide preventive measures to combat linguistic and social disadvantage, as well as an opportunity to enhance and complement educational experiences in the home. Primary and secondary education lay the foundations for a wide range of competencies and prepare young people to become lifelong learners and productive members of society. Tertiary education provides a range of options for individuals to gain advanced knowledge and skills, either immediately following school or later in life.

This indicator presents several measures of participation in education in order to portray levels of access to education in different countries. Trends in enrolment at the various levels of education are also presented as an indicator of how access to education has evolved.

Education and training are becoming an important component of lifelong learning, embracing individual and social development in a wide variety of institutional settings.

EVIDENCE AND EXPLANATIONS

Overall participation in education

In 25 out of 27 OECD countries, individuals participate in formal education for between 15 and 20 years, on average.

One way of looking at participation in education is to estimate the number of years of full-time and part-time education in which a five-year-old child can expect to enrol over his or her lifetime, given current enrolment rates. This "school expectancy" is estimated by taking the sum of enrolment rates for each single year of age, starting at the age of five (Chart C1.2). In OECD countries, school expectancy varies from 12 years or less in Mexico and Turkey, to over 18 years in Australia, Belgium, Finland, Sweden and the United Kingdom.

Most of the variation comes from differences in enrolment rates in upper secondary education.

Most of the variation between countries in school expectancy comes from differences in enrolment rates in upper secondary education. Although the relative differences in participation are also large at the tertiary level, they apply to a smaller proportion of the cohort and thus have less effect on school expectancy.

Since measures of the average duration of schooling, such as "school expectancy", are affected by participation rates over the life cycle, they underestimate the actual years of schooling in systems where access to education is expanding. This measure also does not distinguish between full-time and part-time participation, which means that countries with relatively large proportions of part-time enrolments will tend to have relatively high values. In Australia, Belgium, Hungary, Iceland, New Zealand, Portugal, Sweden and the United Kingdom, participation in part-time education accounts for two or more years of school expectancy (Table C1.1).

Behind these overall figures, however, there are important structural differences: in some countries part-time education is pursued only at the tertiary level, while in others it is also available and sought after in secondary education (see also Table C1.4 and indicator C3). In countries where the school expectancy at a certain level of education exceeds the number of grades at that level, the effect of repetition (or in the case of Australia, the number of adults enrolling in those programmes) has a greater impact on school expectancy than the proportion of students leaving school before the level of education is completed.

Long school expectancy does not necessarily imply that all young people have access to higher levels of education...

Enrolment rates are influenced both by entry rates to a particular level of education and by the typical duration of studies. A high number of expected years in education, therefore, does not necessarily imply that all young people will participate in education for a long period of time. Belgium and Sweden, with a school expectancy of over 18 years for five-year-olds, have nearly full enrolment (rates over 90 per cent) for 15 and 13 years of education, respectively. Conversely, Australia and Finland, which have equally high school expectancy, have nearly full enrolment (rates over 90 per cent) for only 11 years of education (Chart C1.2 and Table C1.2).

... but in most OECD countries, virtually all young people participate in at least 11 years of formal education.

In most OECD countries, virtually all young people have access to formal education, which lasts at least 11 years. The age band in which at least 90 per cent of students are enrolled spans 13 or more years in Belgium, Denmark, France, Japan, the Netherlands and Sweden. Mexico and Turkey, by contrast, have enrolment rates exceeding 90 per cent for a period of seven years or less (Table C1.2).

In the majority of OECD countries, women can expect to receive more years of education than men – an additional 0.4 years, on average.

In the majority of OECD countries, women can expect to receive more years of education than men – an additional 0.4 years, on average. Variation between countries in school expectancy is generally greater for women than for men. Some countries show sizeable gender differences. In Korea, Turkey, Switzerland and the United States men can expect to stay between 0.8 to 1.9 years longer in education than women. The opposite is true in Finland, Iceland, New Zealand, Norway, Sweden and the United Kingdom, where the expected duration of enrolment for women exceeds that of men by more than one year (Table C1.1).

Trends in participation in education

School expectancy increased between 1995 and 1999 in 18 out of 20 OECD countries.

School expectancy increased between 1995 and 1999 in 18 out of the 20 OECD countries for which comparable trend data are available. In Finland, Greece, Hungary, Korea, Poland, Turkey and the United Kingdom, the increase exceeded one year over this relatively short period (Chart C1.1).

In 13 out of 20 countries with comparable data, enrolments for all levels of education increased between 1995 and 1999. However, primary and secondary enrolments only increased in nine of the 13 countries, with increases at all levels of education. Australia, Norway, Mexico and Turkey saw an increase of over 5 per cent in primary and secondary enrolments, whereas Greece, Portugal and Spain saw a decrease of 9 per cent or more (Table C1.4).

The most significant increases occurred at the tertiary level. There was an increase of over 20 per cent in the Czech Republic, Greece, Hungary, Korea, Mexico, Poland and Turkey (Table C3.4).

Chart C1.2. **Net enrolment rates by single year of age (1999)**

By level of education, based on head counts

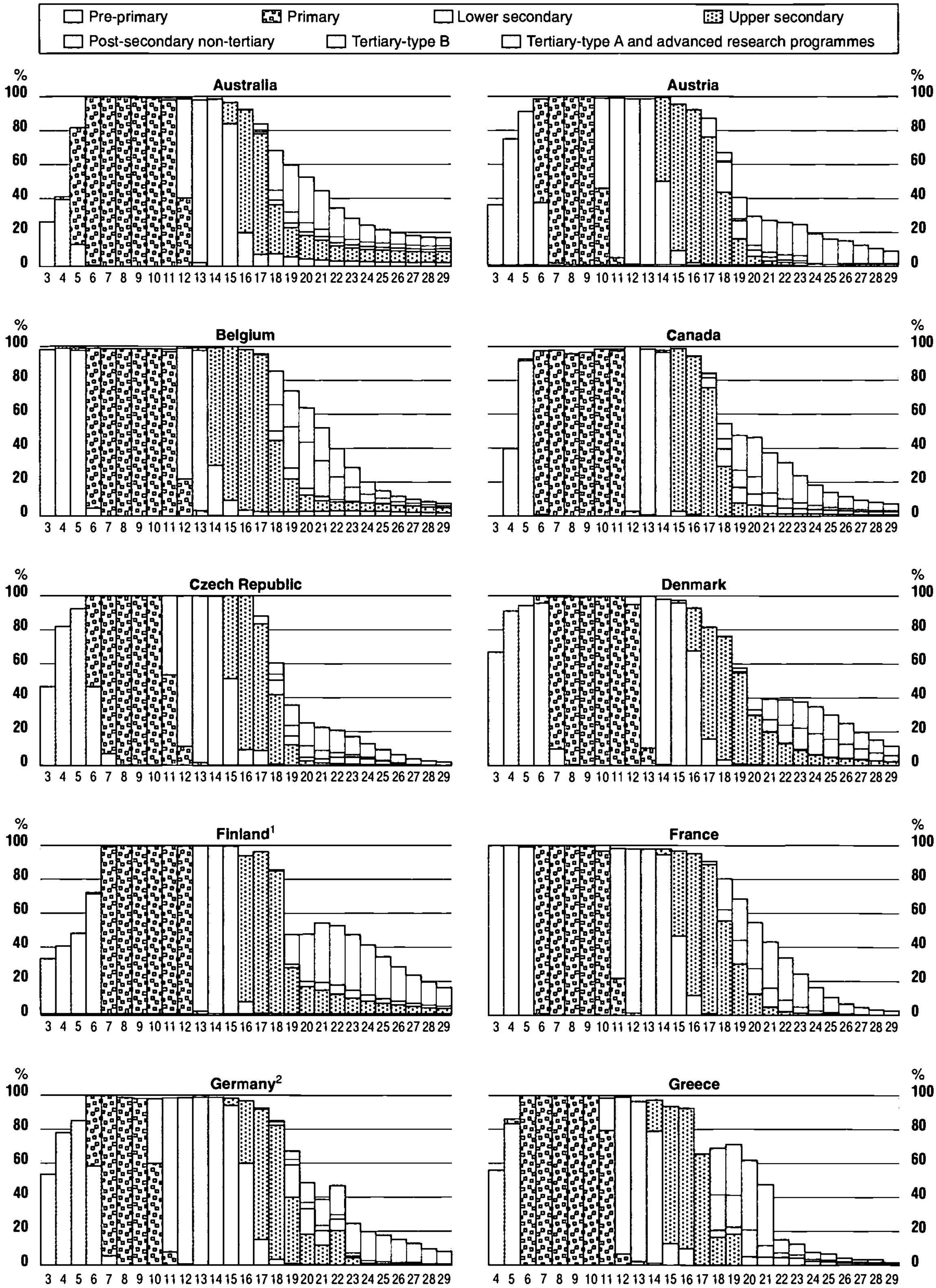


Chart C1.2. **Net enrolment rates by single year of age (1999)** *(cont.)*

By level of education, based on head counts

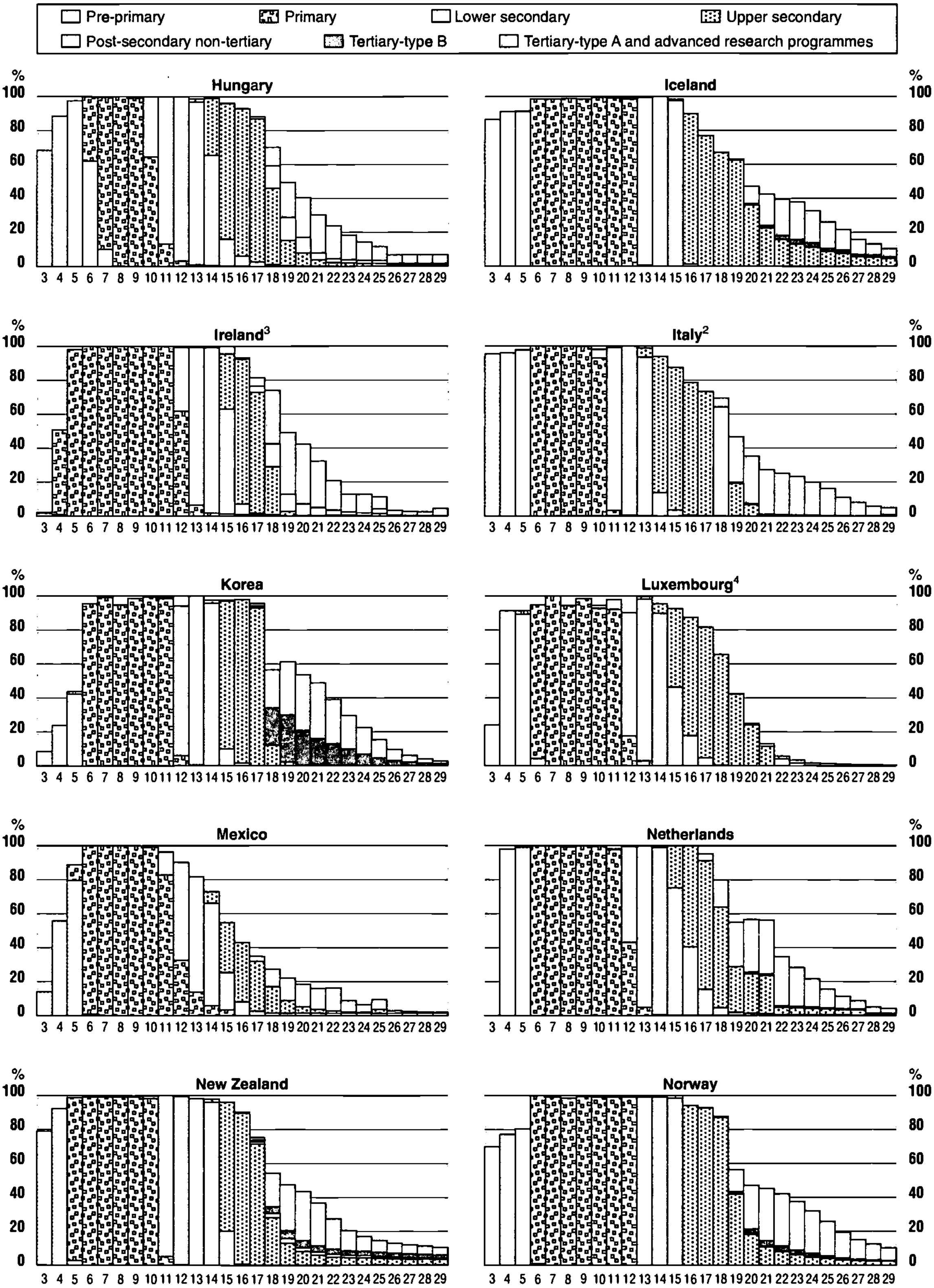
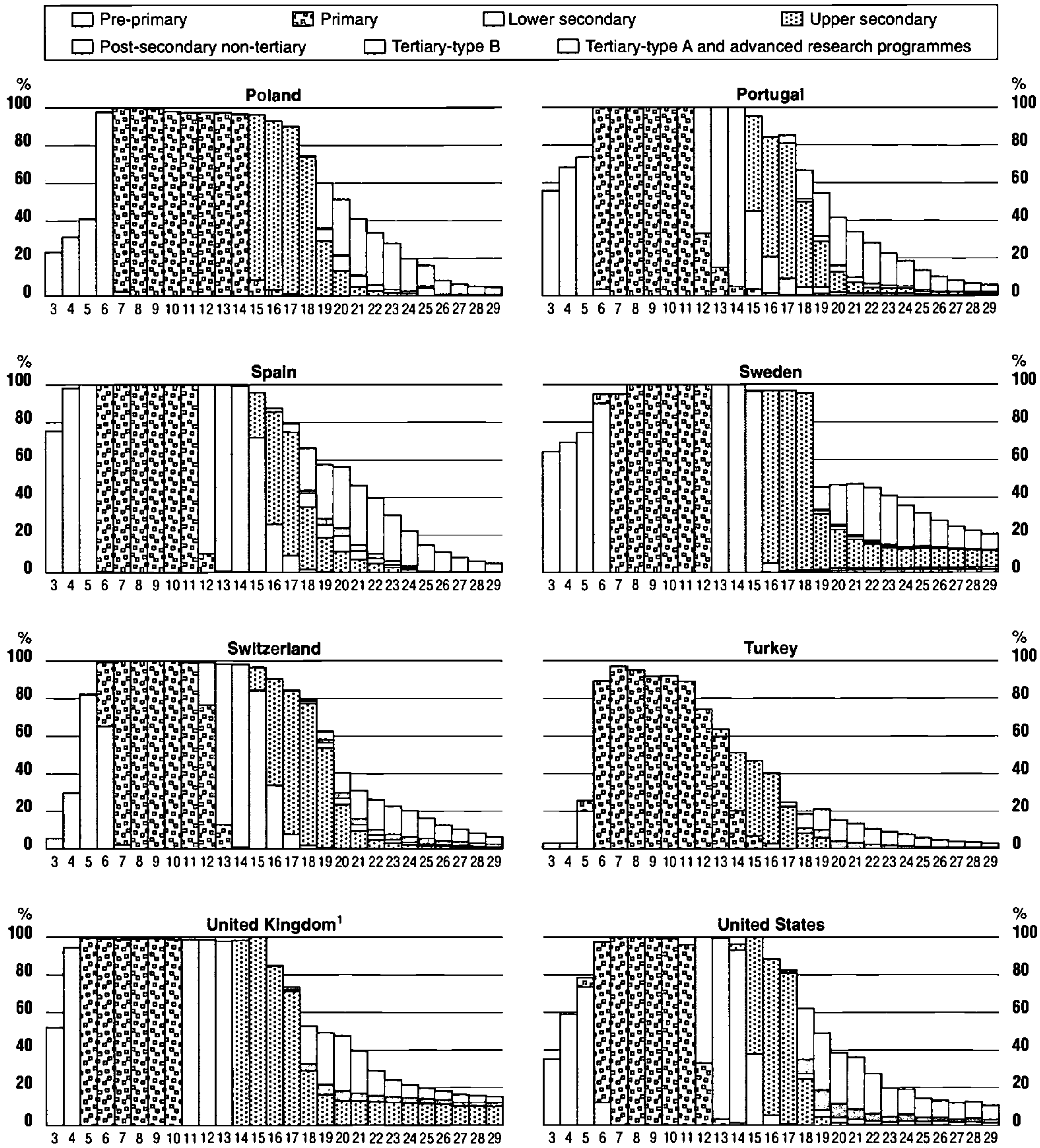


Chart C1.2. **Net enrolment rates by single year of age (1999)** *(cont.)*

By level of education, based on head counts



1. Finland and the United Kingdom: Upper secondary education includes post-secondary non-tertiary education.
2. Germany and Italy: Data are missing for advanced research programmes.
3. Ireland: Tertiary-type A and advanced research programmes includes data for tertiary-type B programmes.
4. Luxembourg: Data are missing for tertiary education.

Source: OECD.

Enrolment in private institutions and in part-time education

Although the large majority of primary and secondary students are enrolled in publicly managed and publicly financed schools, on average in OECD countries, 13.5 per cent of primary and secondary students are now enrolled in privately managed schools (Table C1.4 and Chart C1.3).

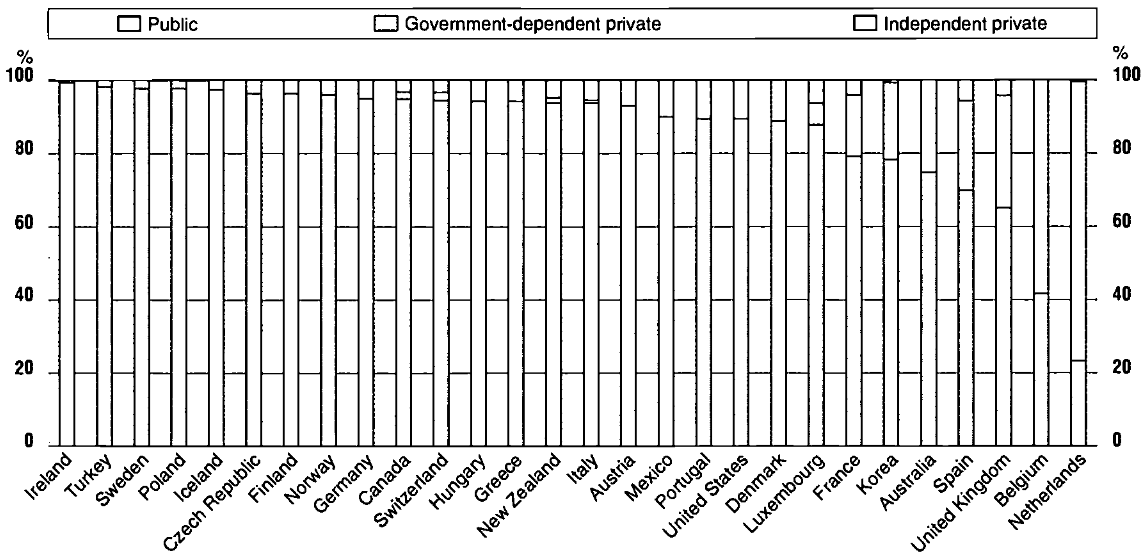
The majority of primary and secondary students are enrolled in public institutions...

In fact, in Belgium and the Netherlands, the majority of primary and secondary students are enrolled in government-dependent private institutions (58.3 and 76.3 per cent respectively), and in Australia, Korea, Spain and the United Kingdom, this figure is more than 20 per cent. At the primary and secondary levels of education, private educational institutions that are mainly financed by household payments are far less common and sometimes seen as imposing barriers to the participation of students from lower income families. Only in Japan, Mexico, Portugal and the United States are around 10 per cent of students enrolled in private institutions that are predominantly financed through unsubsidised household payments (Table C1.4).

... but enrolments in privately managed primary and secondary institutions now account for 13.5 per cent of students, on average, and for the majority of students in Belgium and the Netherlands.

In 26 out of 30 OECD countries, over 90 per cent of students at the primary and secondary levels are enrolled in full-time programmes. However, in Belgium and Sweden, over 10 per cent of primary and secondary enrolments are part-time, and in Australia and the United Kingdom, part-time enrolments count for more than 20 per cent of total enrolments (Table C1.4).

Chart C1.3. **Percentage of primary and secondary students in public and private institutions (1999)**



Countries are ranked in descending order of percentage of pupils enrolled in public institutions.
Source: OECD. Table C1.4.

Participation in early childhood education

In one third of the OECD countries, over 70 per cent of three to four-year-olds are enrolled in either pre-primary or primary programmes.

In the majority of OECD countries, universal enrolment, *i.e.* enrolment rates exceeding 90 per cent, starts between the ages of five and six years of age, although in one third of OECD countries (Belgium, Denmark, France, Hungary, Iceland, Italy, Japan, New Zealand, Norway, Spain and the United Kingdom), over 70 per cent of three to four-year-olds are already enrolled in either pre-primary or primary programmes (Table C1.2). Enrolment rates of three to four-year-olds range from less than 20 per cent in Canada, Korea, and Switzerland, to over 90 per cent in Belgium, France, Iceland, Italy and Spain.

Given the importance of early childhood education and care for building a strong foundation for lifelong learning and for ensuring equitable access to learning opportunities later in school, pre-primary education is of key importance. However, quality early childhood education and care is not only provided in institutionally based pre-primary programmes as covered by this indicator. Inferences on the access to and quality of pre-primary education and care should therefore be made with great care.

Participation towards the end of compulsory education and beyond

A number of factors, including an increased risk of unemployment and other forms of exclusion for young people with insufficient education, influence the decision to stay enrolled beyond the end of compulsory education. In many countries, the transition from education to employment has become a longer and more complex process, providing the opportunity, or the necessity, for students to combine learning and work in order to develop marketable skills (see Chapter E).

Compulsory education ends in OECD countries between the ages of 14 and 18, and in most countries at the age of 15 or 16.

Compulsory education ends in OECD countries between the ages of 14 (Italy, Korea, Portugal and Turkey) and 18 (Belgium, Germany and the Netherlands), with the most common ages being either 15 or 16 years (Table C1.2). However, the age until which students are required by law and regulation to be enrolled in school is not always an age at which enrolment is universal.

Participation in education tends to be high until the end of compulsory education, but there are nine countries in which more than 10 per cent of students do not reach the end of compulsory education.

While participation rates are high in most countries until the end of compulsory education, they drop below 90 per cent before the age at which students are no longer legally required to be enrolled in school in Belgium, Germany, Iceland, Mexico, the Netherlands, New Zealand, Spain, Turkey and the United States. In Belgium, Germany, the Netherlands and the United States, this is due to the comparatively high age at which compulsory education ends (age 17 for the United States and age 18 for Belgium, Germany and the Netherlands). By contrast, 14 OECD countries succeed in retaining virtually all children in school beyond the age at which compulsory education ends (Table C1.2). In Japan, Korea, Finland and Sweden, more than 93 per cent of all 17-year-olds are still enrolled, even though the ending age of compulsory education is under 17 years of age (Table C1.3). In fact, in Sweden, 95 per cent of all 18-year-olds are still enrolled in secondary education.

The sharpest decline in participation occurs not at the end of compulsory education...

In half of the OECD countries, enrolment in education remains close to universal beyond the end of compulsory education, particularly in countries where the age at which compulsory education ends is relatively low. There is no close correspondence between the end of compulsory education and the decline in enrolment rates. After the age of 16, however, enrolment rates begin to decline in all OECD countries except Finland, Portugal and Sweden. On average in OECD countries, the enrolment rate is 82 per cent at the age of 17, 69 per cent at the age of 18, and 55 per cent at age 19. Only eight countries have a participation rate of 50 per cent or above at the age of 20 (Table C1.3).

... but at the end of upper secondary education.

In 20 out of 28 OECD countries, the sharpest decline in enrolment rates occurs at the end of upper secondary education. In Sweden, participation rates drop from 95 to 45 per cent after the age of 18, the typical age at which upper secondary education ends. In Canada, Finland, Korea and Norway, participation rates decline by 30 percentage points or more after upper secondary education ends. In other countries, the decline after either compulsory education or upper secondary education is less pronounced (Table C1.3).

In Australia and the Nordic countries, one out of four 20 to 29-year-olds participates in education.

Although in most countries there is a gradual decline in enrolment rates starting in the last years of upper secondary education, there are several notable exceptions. Some countries continue to maintain relatively high enrolment rates until the age of 20 to 29. In Australia and the Nordic countries, enrolment rates for 20 to 29-year-olds still exceed 25 per cent (Table C1.2)

The transition to post-secondary education

Both graduates from upper secondary programmes who decide not to enter the labour market directly and people who are already working and want to upgrade their skills can choose from a wide range of post-secondary programmes. In OECD countries, tertiary programmes vary in the extent to which they are theoretically-based and designed to prepare students to enter advanced research programmes or professions with high skill requirements (tertiary-type A), or tend to focus on occupationally-specific skills intended for direct labour market entry (tertiary-type B). While the institutional location of programmes used to give a relatively clear idea of their nature (*e.g.*, universities versus non-university institutions of higher education), these distinctions have become blurred.

Post-secondary non-tertiary programmes are offered in 25 out of 29 countries.

Upper secondary graduates in a number of systems also have the option of taking relatively short programmes (less than two years) to prepare them to enter trades or specific vocational fields. While these programmes are offered as advanced or second cycle upper secondary programmes in some countries (*e.g.*, Austria, Hungary, Germany and Spain), they are offered in the post-secondary sector in others (*e.g.*, Canada and the United States). From an internationally comparative point of view, these programmes straddle the boundary between upper secondary and tertiary education. In 25 out of 29 countries, programmes of this nature are offered to upper secondary graduates. In Austria, Hungary and Ireland, over 10 per cent of 18 and 19-year-olds are enrolled in such post-secondary non-tertiary programmes (ISCED 4), and in Belgium, Canada, the Czech Republic and Spain, over 6 per cent are enrolled. The transition from secondary education to post-secondary education occurs at different ages in different countries (Charts C1.2 and C1.3). However, only Austria has over 10 per cent of 17-year-olds enrolled at the post-secondary non-tertiary level. Most other countries see the major transitions from upper secondary to post-secondary non-tertiary education at the age of 18. An exception is Germany, where the transition occurs mainly at ages 19 and 20 (around 15 per cent of 19 and 20-year-olds are enrolled in post-secondary non-tertiary education).

Participation in tertiary education

On average in OECD countries, a 17-year-old can expect to attend 2.5 years of tertiary education.

On average in OECD countries, a 17-year-old can expect to attend 2.5 years of tertiary education over his or her lifetime. Both tertiary entry rates and the typical duration of study affect the expectancy of tertiary education. In Australia, Finland, Korea, New Zealand, Norway and the United States this value is three years or more. In the Czech Republic, Mexico and Turkey, by contrast, the expectancy of tertiary education is 1.4 years or less (see Table C1.1 and indicator C3).

Policies of expanding youth education have, in many countries, increased pressure for greater access to tertiary education.

Policies of expanding youth education have, in many countries, increased pressure for greater access to tertiary education. Thus far, this pressure has more than compensated for declines in cohort sizes which until recently led to predictions of stable or declining demand from school leavers in several countries. In some countries, there are now signs of a levelling off in the demand for tertiary education, but the overall trend remains upward.

Participation in continuing education and training

Increasing demand for skills can be addressed only partly by changes in the formal educational system.

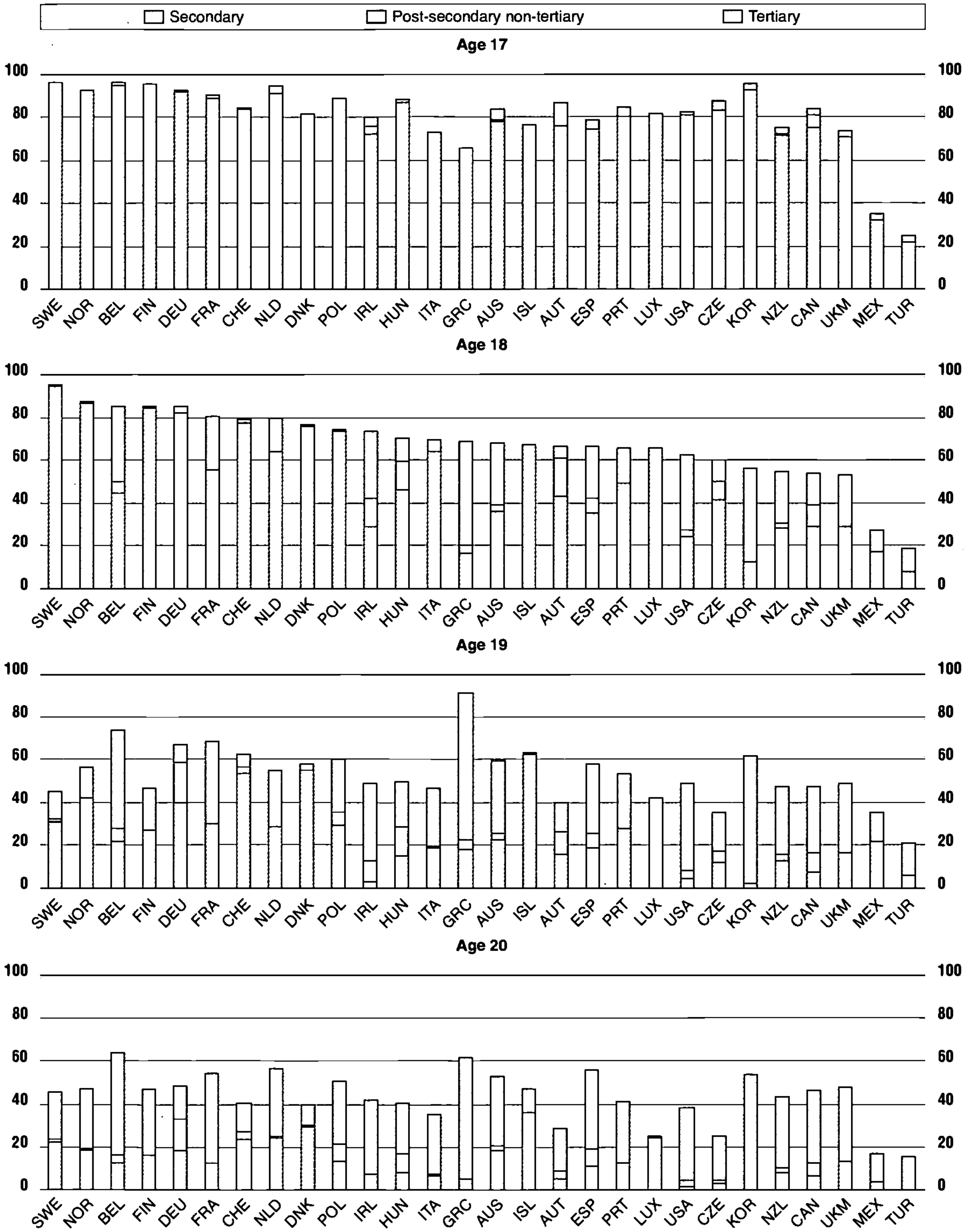
There is growing recognition in OECD countries of the importance of investment in human capital through lifelong learning. Increasing demand in the workplace for individuals who are good at using and interpreting knowledge flexibly can only be partially addressed through curricular changes in schools and universities, as changes initiated in the formal education system today will take several decades to have an impact on the population at large. Continuing education and training, outside formal education, also allows individuals an opportunity to repair and/or complement previously received education and training.

More than one third of 25 to 44-year-olds participate in some continuing education and training in 10 out of 18 countries.

Table C1.5 shows the participation rates in continuing education and training. More than one third of all people aged 25 to 44 participate in some continuing education and training (not leading to a formal educational qualification) in 10 out of 18 countries for which comparable data are available. The number of hours of training in which people aged 20 can expect to participate over their lifetime is substantial. It ranges from around 1 000 hours of continuing education and training in the Flemish Community of Belgium, Italy and Poland, to over 3 000 hours in Denmark and Finland. Using course intensity/duration benchmarks of around 30 hours per week and 40 weeks per year for "equivalent" full-time participation, these data imply that adults in the OECD countries covered can expect to participate in an equivalent of 0.7 to 3.2 years of full-time training between the ages of 20 and 65 (Table C1.5).

Chart C1.4. **Transition characteristics at ages 17, 18, 19 and 20 (1999)**

Net enrolment rates in public and private institutions, by level of education and age, based on head counts



Countries are ranked in decreasing order of net enrolment rates at age 18.
Source: OECD. Table C1.3.

DEFINITIONS AND METHODOLOGIES

Data refer to 1998/1999 and are based on the UOE data collection on education statistics and the 2000 World Education Indicators Pilot Project.

Except where otherwise noted, figures are based on head counts, that is, they do not distinguish between full-time and part-time study. A standardised distinction between full-time and part-time participants is very difficult, as a number of countries do not recognise the concept of part-time study, although in practice at least some of their students would be classified as part-time by other countries. Note that for some countries, part-time education is not completely covered by the reported data.

The average duration of formal education in which a five-year-old child can expect to enrol over his or her lifetime, referred to as "school expectancy" in this indicator, is calculated by adding the net enrolment percentages for each single year of age from the age of five onwards. The average duration of schooling for the cohort will reflect any tendency to lengthen (or shorten) studies in subsequent years. Caution is required when data on school expectancy are compared. Neither the length of the school year nor the quality of education is necessarily the same in each country.

Net enrolment rates expressed as percentages in Table C1.2 are calculated by dividing the number of students of a particular age group enrolled in all levels of education, by the number of people in the population in that age group. Table C1.3 presents net enrolment rates by single year of age for 15 to 20-year-olds at each level of education.

Table C1.1 shows the index of change in school expectancy and Table C1.4 shows the index of change in primary and secondary enrolments between 1995 and 1999. The data on enrolment for 1994/1995 were obtained through a special survey in 2000 and follow the ISCED-97 classification.

Data on continuing education and training are from the International Adult Literacy Survey (IALS).

In most countries, the achieved national samples in both the first and second International Adult Literacy Surveys (IALS) conducted by the OECD and Statistics Canada amounted to between 2 000 and 4 500 respondents. Each of the statistical comparisons made in this section has been tested for statistical significance. Standard errors for each of the tables are provided in parenthesis.

Any participation in formal education is netted out of the IALS responses to avoid double counting.

The IALS background questionnaire records any participation in education or training during the 12 months preceding the survey. The IALS definition of education and training is very broad, covering a rather wider range of training types than in other surveys. For the purpose of this indicator it is necessary to distinguish between formal education as included in school expectancy (Table C1.1), and continuing education and training of people who have left the education system. The training of people who indicated that they had participated in any education leading to formal qualifications is excluded, since they are normally included in the counts in Table C1.1.

Table C1.1. **School expectancy (1999)**

Expected years of schooling under current conditions in public and private institutions, excluding education for children under five years of age, by level of education and mode of study, and change in school expectancy for all levels of education (1995 = 100)

	Full-time and part-time							Full-time	Part-time	Index of change in school expectancy for all levels of education combined (1995 = 100)
	All levels of education combined			Primary and lower secondary education	Upper secondary education	Post-secondary non-tertiary education	Tertiary education	All levels of education combined	All levels of education combined	
	M + W	Men	Women	M + W				M + W		M + W
OECD countries										
Australia*	19.9	19.5	19.9	11.7	4.4	0.5	3.0	14.3	5.6	103
Austria*	16.0	16.1	15.9	8.2	3.8	0.5	2.2	15.8	0.2	103
Belgium*	18.5	18.2	18.9	9.0	5.3	0.5	2.7	16.3	2.3	103
Canada	16.5	16.3	16.8	8.8	3.3	0.8	2.8	15.3	1.2	97
Czech Republic	15.1	15.0	15.2	9.2	2.7	0.4	1.4	15.0	0.1	106
Denmark	17.7	17.2	18.2	9.8	3.4	0.1	2.5	17.7	n	105
Finland*	18.3	17.7	19.0	9.0	4.2	x	3.9	18.3	n	107
France	16.5	16.3	16.7	9.5	3.3	n	2.6	16.5	n	100
Germany*	17.2	17.3	17.1	10.1	2.9	0.5	2.0	17.1	0.1	105
Greece	15.6	15.4	15.8	9.1	2.8	0.4	2.5	15.4	0.2	112
Hungary*	16.0	15.8	16.2	8.2	3.7	0.6	1.8	13.7	2.3	111
Iceland	17.7	17.1	18.3	9.9	4.7	0.1	2.0	15.6	2.0	m
Ireland*	16.0	15.6	16.4	10.7	2.3	0.6	2.4	15.2	0.8	104
Italy	15.8	15.5	16.0	8.2	4.2	n	2.3	15.8	n	m
Japan*	m	m	m	9.1	3.0	m	m	m	m	m
Korea	15.8	16.7	14.8	8.9	2.9	a	3.5	15.8	n	110
Luxembourg	m	m	m	9.2	3.5	0.1	m	m	m	m
Mexico	12.4	12.5	12.4	9.4	1.3	a	0.9	12.4	n	103
Netherlands*	17.1	17.4	16.9	10.4	3.3	0.1	2.3	16.4	0.7	m
New Zealand	17.2	16.5	17.8	10.1	3.8	0.3	3.0	15.2	2.0	m
Norway	17.9	17.4	18.5	9.9	4.1	0.1	3.1	16.9	1.0	102
Poland	16.0	15.6	16.4	8.0	4.0	0.3	2.3	14.3	1.7	111
Portugal	16.8	16.5	17.1	10.9	2.9	a	2.3	13.8	3.0	102
Slovak Republic	m	m	m	m	m	m	m	m	m	m
Spain*	17.3	17.0	17.7	10.5	2.6	0.4	2.8	16.8	0.6	102
Sweden	20.3	18.6	22.2	9.8	5.7	0.1	2.9	16.7	3.6	m
Switzerland	16.3	16.7	15.9	9.6	3.3	0.2	1.7	15.9	0.4	m
Turkey*	10.6	11.3	9.5	7.3	1.9	a	1.2	10.6	n	112
United Kingdom*	18.9	18.1	19.7	8.9	7.3	x	2.6	14.7	4.2	110
United States	17.2	17.7	16.6	9.7	2.7	0.4	3.6	15.3	1.9	m
Country mean	**16.7**	**16.5**	**16.9**	**9.4**	**3.6**	**0.2**	**2.5**	**15.4**	**1.2**	**105**
WEI participants										
Argentina[1]	14.2	13.8	14.5	10.4	1.8	a	2.6	13.5	0.7	m
Brazil[1]	14.9	14.7	15.0	10.6	2.3	a	0.8	14.9	n	m
Chile[1]	14.3	14.4	14.1	8.2	3.4	a	1.6	14.2	n	m
China	10.1	x	x	8.6	1.1	0.1	0.3	m	m	m
Egypt	11.0	10.0	9.4	7.8	1.8	m	1.3	11.0	n	m
Indonesia[2]	9.7	9.9	9.4	7.8	1.1	a	0.5	9.7	n	m
Israel	15.4	15.1	15.8	8.6	3.1	0.1	2.6	14.9	0.6	m
Jordan	10.6	10.6	10.6	8.9	1.5	a	m	10.6	n	m
Malaysia[1]	12.5	12.3	12.8	8.6	1.7	0.1	1.0	12.5	0.1	m
Paraguay[1]	11.0	11.0	11.0	9.1	1.2	a	m	11.0	n	m
Peru[1]	13.2	13.3	13.0	9.8	1.4	n	1.4	13.2	n	m
Philippines[1]	11.8	11.6	12.1	9.5	0.6	0.1	1.3	11.5	0.3	m
Russian Federation	12.2	13.6	14.1	2.5	1.3	n	2.5	10.4	1.8	m
Thailand	18.1	18.1	18.0	9.9	2.4	n	1.7	13.1	5.0	m
Tunisia	13.4	13.6	13.3	9.9	2.4	a	0.8	13.4	n	m
Uruguay[1]	15.2	14.0	16.4	9.9	2.2	a	1.9	15.2	n	m
Zimbabwe	9.9	10.5	9.3	8.6	1.2	a	0.1	9.9	n	m

1. Year of reference 1998.
2. Year of reference 2000.
* See Annex 3 for notes.
Source: OECD.

C1

Table C1.2. **Enrolment rates (1999)**

Net enrolment rates by age group for full-time and part-time students in public and private institutions

	Ending age of compulsory education	Number of years at which over 90% of the respective age group are enrolled	Age range at which over 90% of the population are enrolled	Students aged: 4 and under as a percentage of the population aged 3 to 4	5 to 14 as a percentage of the population aged 5 to 14	15 to 19 as a percentage of the population aged 15 to 19	20 to 29 as a percentage of the population aged 20 to 29	30 to 39 as a percentage of the population aged 30 to 39	40 and over as a percentage of the population aged over 40
OECD countries									
Australia	15	11	6-16	33.8	97.7	80.3	27.3	14.0	6.0
Austria	15	12	5-16	56.2	98.7	76.7	18.2	4.0	0.4
Belgium*	18	15	3-17	118.2	98.8	90.6	24.6	7.3	1.2
Canada	16	12	5-16	19.7	96.6	75.3	20.3	4.4	1.2
Czech Republic	15	12	5-16	66.9	99.3	74.8	12.9	1.1	a
Denmark	16	13	4-16	78.9	99.0	80.4	28.7	5.8	0.9
Finland	16	11	7-17	36.3	91.2	84.5	36.1	8.8	1.6
France*	16	15	3-17	118.2	99.9	87.2	18.9	1.8	x
Germany*	18	12	6-17	65.8	100.1	88.3	22.6	3.0	0.2
Greece	14.5	12	6-19	28.2	98.5	82.0	15.9	n	n
Hungary	16	12	5-16	78.6	99.8	78.1	17.2	3.4	0.1
Iceland*	16	12	4-15	121.4	98.2	78.7	28.8	6.0	1.7
Ireland	15	12	5-16	27.8	99.9	79.8	15.0	3.6	x
Italy	14	12	3-14	98.0	99.2	70.7	16.9	1.6	0.1
Japan*	15	14	4-17	76.3	101.2	m	m	m	m
Korea	14	12	6-17	16.2	91.8	81.2	21.9	1.2	0.3
Luxembourg*	15	12	4-15	57.9	95.3	73.8	4.7	0.4	n
Mexico	15	7	6-12	35.0	94.0	39.3	8.7	1.9	0.7
Netherlands	18	14	4-17	49.7	99.4	87.7	22.0	2.5	0.4
New Zealand	16	12	4-15	85.4	98.8	72.5	20.4	8.7	2.9
Norway	16	12	6-17	73.6	97.4	86.1	27.5	6.0	1.2
Poland	15	11	6-16	28.4	93.5	83.0	22.7	2.7	x
Portugal*	14	10	6-15	61.9	105.6	76.3	18.8	3.1	0.5
Slovak Republic	15	m	m	m	m	m	m	m	m
Spain*	16	12	4-15	97.0	104.8	76.3	23.7	2.4	0.3
Sweden	16	13	6-18	66.9	98.5	86.2	33.7	15.5	3.3
Switzerland	15	11	6-16	19.3	98.2	83.6	18.6	3.3	0.1
Turkey	14	4	7-10	x	76.9	30.5	7.9	1.5	0.2
United Kingdom*	16	12	4-15	77.4	99.0	72.5	23.6	14.0	5.0
United States*	17	10	6-15	47.2	100.7	78.1	20.4	5.9	2.3
Country mean	**16**	**12**	~	**60.0**	**97.7**	**76.9**	**20.7**	**4.8**	**1.1**
WEI participants									
Argentina[1]	14	10	5-14	35.5	103.7	60.8	21.4	4.1	1.0
Brazil[1]	14	8	7-14	18.8	88.8	71.3	16.5	5.0	2.4
Chile[1]	14	8	6-13	21.8	91.3	65.2	2.4	0.5	0.1
Egypt	13	6	6-11	5.8	82.6	30.5	m	m	m
Indonesia[2]	15	3	7-12	n	76.0	37.0	2.6	n	n
Israel	16	12	5-16	98.6	97.1	61.4	19.5	4.3	0.9
Jordan	15	m	m	14.0	83.4	46.5	m	m	m
Malaysia[1]	16	8	6-13	2.9	96.6	44.4	5.6	0.2	n
Paraguay[1]	14	5	7-11	6.3	85.9	39.2	2.6	x	x
Peru[1]	16	9	6-17	47.1	93.8	74.9	x	x	x
Philippines[1]	12	6	7-16	n	84.8	61.9	3.5	n	n
Russian Federation	15	4	3-13	151.1	79.1	32.0	x	x	x
Thailand	14	9	5-13	48.8	98.7	57.5	3.3	m	m
Tunisia	16	7	6-13	11.0	86.4	51.8	3.8	n	n
Uruguay[1]	15	8	6-13	25.5	99.0	56.1	18.1	3.4	0.4
Zimbabwe	15	7	7-13	n	80.9	37.0	m	m	m

Note: Ending age of compulsory education is the age at which compulsory schooling ends. E.g. an ending age of 18 indicates that all students under 18 are legally obliged to participate in education.

1. Year of reference 1998.
2. Year of reference 2000.

* See Annex 3 for notes.

Source: OECD.

Table C1.3. **Transition characteristics at ages 15, 16, 17, 18, 19 and 20 (1999)**

Net enrolment rates in public and private institutions, by level of education and age, based on head counts

	Graduation age at upper secondary education	Age 15	Age 16			Age 17			Age 18			Age 19			Age 20		
		Secondary	Secondary	Post-secondary non-tertiary	Tertiary	Secondary	Post-secondary non-tertiary	Tertiary	Secondary	Post-secondary non-tertiary	Tertiary	Secondary	Post-secondary non-tertiary	Tertiary	Secondary	Post-secondary non-tertiary	Tertiary
OECD countries																	
Australia*	19	96	92	n	n	78	1	5	36	3	29	23	3	34	18	2	32
Austria	17-19	95	92	n	a	76	11	n	43	18	6	15	11	14	5	4	20
Belgium*	18-19	100	98	n	n	95	n	1	44	6	35	22	6	46	12	4	47
Canada	18	98	93	n	n	75	6	3	29	10	15	8	9	30	7	6	33
Czech Republic	18-19	100	100	a	n	83	5	n	42	9	10	12	5	18	3	2	20
Denmark	19-20	97	93	n	n	82	n	n	76	n	n	55	n	3	30	n	10
Finland	19	100	94	x	n	96	x	n	84	x	1	27	x	19	16	x	31
France	18-20	97	95	n	n	89	n	2	55	n	25	30	n	38	12	n	42
Germany	19	98	97	n	n	92	n	1	82	n	3	40	19	8	18	15	15
Greece	18	93	92	a	a	65	a	a	16	4	48	18	4	69	n	5	57
Hungary	16-18	96	93	n	a	87	1	a	46	13	11	15	14	21	8	9	24
Iceland	20	98	90	a	a	77	a	a	67	a	n	63	a	1	36	n	11
Ireland*	17-18	96	92	n	n	72	4	5	29	13	32	3	10	36	n	7	35
Italy	17-19	88	79	n	a	73	n	a	64	n	5	19	1	27	7	n	28
Japan*	18	99	95	a	a	94	a	n	m	m	m	m	m	m	m	m	m
Korea	17-18	97	98	a	n	93	a	3	12	a	44	2	a	59	n	a	53
Luxembourg	18-19	92	87	a	a	81	a	a	65	n	m	42	n	m	24	1	m
Mexico	18	52	43	a	a	32	a	3	17	a	10	22	a	13	4	a	13
Netherlands*	18-19	102	107	a	a	91	n	4	64	n	16	29	n	26	25	1	31
New Zealand	18	96	89	n	n	71	1	3	28	3	23	13	3	32	8	2	33
Norway	19	100	94	n	n	93	n	n	87	n	n	42	n	14	18	1	28
Poland	18-20	88	90	a	a	89	a	x	73	n	1	29	6	25	13	8	30
Portugal	18	92	83	a	a	80	a	4	50	a	16	28	a	26	12	a	29
Slovak Republic	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Spain	16-18	95	85	2	a	75	4	n	35	7	24	19	7	32	11	8	37
Sweden	19	97	97	a	n	97	a	n	95	n	n	31	2	13	22	2	22
Switzerland	18-20	97	90	n	n	84	n	n	77	1	1	54	3	6	24	4	13
Turkey	17	40	37	a	n	22	a	3	8	a	10	6	a	15	a	a	15
United Kingdom*	16-18	103	84	x	n	71	x	2	29	x	24	16	x	33	13	x	34
United States	18	107	88	n	n	81	n	1	25	3	35	5	4	41	1	3	34
Country mean	**18**	**93**	**89**	**n**	**n**	**79**	**1**	**1**	**49**	**3**	**16**	**24**	**4**	**26**	**12**	**3**	**29**
WEI participants																	
Argentina[1]	18	75	68	a	n	59	a	3	31	a	18	16	a	21	x	a	22
Brazil[1]	17-18	46	54	a	n	50	a	1	44	a	3	32	a	6	24	a	7
Chile[1]	18	83	85	a	n	78	a	m	52	a	m	20	a	m	7	a	m
China	18	50	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Egypt	17	67	53	m	x	28	m	x	n	m	x	n	m	x	n	m	x
Indonesia[2]	18	45	38	a	a	39	a	a	26	a	12	9	a	15	2	a	14
Israel	17	95	92	a	n	85	n	n	19	1	1	3	1	4	1	1	7
Jordan	17	79	72	a	m	56	a	m	16	a	m	4	a	m	n	a	m
Malaysia[1]	19	76	72	n	n	10	n	n	12	1	23	2	1	21	n	1	20
Paraguay[1]	17	53	49	a	x	41	a	n	27	a	1	10	a	2	5	a	3
Peru[1]	m	70	66	n	1	81	n	8	x	n	15	x	n	18	x	n	19
Philippines[1]	17	71	66	n	24	22	8	37	10	3	27	4	3	12	1	n	24
Russian Federation	18	47	52	m	m	19	m	m	1	m	m	n	m	m	n	m	m
Thailand	17	76	62	n	n	49	m	n	33	n	34	5	n	29	1	n	16
Tunisia	m	71	60	a	m	51	a	m	42	a	m	32	a	m	19	a	m
Uruguay[1]	17	71	67	a	a	54	a	4	34	a	15	20	a	14	13	a	12
Zimbabwe	19	51	53	m	m	40	m	m	22	m	m	13	m	m	n	m	m

1. Year of reference 1998.
2. Year of reference 2000.
• See Annex 3 for notes.
Source: OECD.

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Table C1.4. **Primary and secondary students in public and private institutions and change in primary and secondary enrolments (1999)**

Distribution of students in primary and secondary education, by mode of enrolment and type of institution

	Type of institution			Mode of enrolment		Index of change in enrolments (1995 = 100)
	Public	Government-dependent private	Independent private	Full-time	Part-time	
OECD countries						
Australia	74.8	25.2	a	75.4	24.6	108
Austria	93.0	7.0	n	99.0	1.0	102
Belgium*	41.7	58.3	x	85.9	14.1	102
Canada	94.8	2.0	3.2	99.4	0.6	99
Czech Republic	96.2	3.8	a	99.7	0.3	95
Denmark*	88.7	11.3	a	100.0	a	103
Finland	96.2	3.8	a	100.0	a	104
France	79.2	16.8	4.0	100.0	a	98
Germany	94.9	5.1	x	99.8	0.2	104
Greece	94.1	a	5.9	98.0	2.0	91
Hungary	94.2	5.8	a	97.1	2.9	96
Iceland	97.3	2.7	n	92.9	7.1	m
Ireland	99.3	a	0.7	99.8	0.2	96
Italy	93.7	0.8	5.5	100.0	a	98
Japan*	89.1	a	9.9	99.0	1.0	m
Korea	78.3	21.0	0.7	100.0	a	95
Luxembourg	87.7	5.9	6.4	100.0	n	m
Mexico	90.0	a	10.0	100.0	a	105
Netherlands	23.3	76.3	0.5	97.5	2.5	m
New Zealand	93.7	1.4	4.9	94.8	5.2	m
Norway	96.0	4.0	x	99.1	0.9	113
Poland	97.7	2.3	0.1	95.7	4.2	97
Portugal	89.4	a	10.6	93.4	6.6	89
Slovak Republic	95.1	4.9	a	98.4	1.6	m
Spain	69.8	24.5	5.7	96.7	3.3	88
Sweden	97.7	2.3	a	84.5	15.5	m
Switzerland	94.4	2.2	3.4	99.7	0.3	m
Turkey	98.2	a	1.8	100.0	a	108
United Kingdom*	65.1	30.7	4.2	77.8	22.2	103
United States	89.3	a	10.7	100.0	n	m
Country mean	**86.4**	**10.6**	**2.9**	**96.1**	**3.9**	**100**
WEI participants						
Argentina[1]	77.7	18.6	3.7	100.0	a	m
Brazil[1]	89.1	a	10.9	100.0	a	m
Chile[1]	56.2	35.1	8.6	100.0	n	m
China	m	m	m	96.4	3.6	m
Indonesia[2]	82.7	a	17.3	100.0	a	m
India	68.2	16.6	8.5	94.1	5.9	m
Israel	100.0	m	m	98.8	1.2	m
Jordan	76.5	a	23.5	100.0	a	m
Malaysia[1]	96.7	x	3.3	100.0	n	m
Paraguay[1]	81.4	9.4	9.2	100.0	n	m
Peru[1]	85.8	3.5	10.7	100.0	a	m
Philippines[1]	86.5	a	13.5	100.0	a	m
Russian Federation	99.7	a	0.3	97.6	2.4	m
Thailand	89.4	8.6	2.0	83.4	16.6	m
Tunisia	96.1	a	3.9	100.0	n	m
Uruguay[1]	86.2	a	13.8	100.0	a	m
Zimbabwe	16.1	83.9	a	100.0	n	m

1. Year of reference 1998.
2. Year of reference 2000.
* See Annex 3 for notes.
Source: OECD.

Table C1.5. **Participation in training outside formal education**

Expected hours of training outside formal education, net participation rates, and mean number of hours of participation per year, by age group

	Expected hours of training outside formal education between the ages of 25 and 64	Estimate of "equivalent" full-time participation (years)[1]	Participation rate, by age group					Mean number of hours per year per participant, by age group				
			25-34	35-44	45-54	55-64	25-64	25-34	35-44	45-54	55-64	25-64
OECD countries												
Australia	1 221 (51.9)	1.0	30 (1.2)	32 (1.3)	26 (1.1)	18 (1.2)	27 (0.7)	108 (7.3)	107 (8.7)	103 (10.3)	82 (10.6)	104 (3.7)
Belgium (Fl.)	1 020 (92.9)	0.8	23 (2.0)	20 (1.4)	21 (2.0)	12 (2.0)	20 (1.0)	110 (17.1)	114 (14.7)	87 (16.5)	m (m)	103 (9.3)
Canada	m (m)	m	32 (3.1)	37 (3.0)	28 (5.2)	12 (3.9)	30 (1.7)	107 (14.7)	93 (15.9)	102 (8.7)	78 (105.1)	99 (5.9)
Czech Republic	1 118 (122.6)	0.9	28 (1.9)	25 (1.9)	28 (1.8)	11 (1.2)	25 (1.0)	97 (16.6)	79 (9.2)	88 (13.3)	65 (9.3)	87 (6.7)
Denmark	3 224 (143.7)	2.7	50 (1.7)	59 (1.8)	56 (2.0)	34 (2.0)	51 (0.7)	142 (9.7)	154 (11.4)	145 (11.0)	122 (10.5)	144 (6.8)
Finland	3 876 (185.5)	3.2	59 (1.6)	62 (1.6)	57 (1.8)	31 (2.0)	54 (0.8)	217 (16.6)	158 (11.3)	119 (13.0)	74 (8.5)	151 (7.0)
Hungary	1 206 (93.8)	1.0	24 (2.5)	19 (1.5)	17 (2.3)	4 (1.1)	17 (0.7)	148 (20.2)	167 (27.1)	116 (17.9)	170 (51.9)	142 (12.9)
Ireland	1 219 (171.5)	1.0	21 (2.1)	21 (2.5)	17 (3.7)	m (m)	18 (1.9)	172 (24.3)	152 (35.9)	125 (33.2)	m (m)	148 (13.2)
Italy	861 (98.1)	0.7	21 (2.2)	25 (1.8)	19 (1.7)	9 (2.0)	19 (1.3)	144 (16.6)	85 (9.0)	67 (6.2)	61 (8.6)	96 (7.5)
Netherlands	2 027 (159.9)	1.7	38 (1.8)	35 (2.2)	30 (1.7)	16 (2.2)	31 (0.9)	164 (17.0)	126 (11.9)	100 (11.2)	83 (14.3)	129 (8.1)
New Zealand	1 714 (146.2)	1.4	41 (2.0)	42 (2.2)	41 (2.9)	24 (3.0)	38 (1.1)	140 (23.6)	127 (18.2)	95 (16.3)	97 (32.1)	121 (11.3)
Norway	2 341 (151.0)	2.0	46 (2.2)	49 (2.0)	46 (3.6)	26 (2.5)	44 (1.4)	122 (9.2)	127 (13.3)	104 (17.9)	96 (17.4)	116 (8.0)
Poland	1 024 (104.1)	0.9	17 (1.1)	17 (1.7)	14 (1.9)	m (m)	13 (0.8)	144 (34.4)	138 (48.3)	119 (27.3)	m (m)	136 (25.9)
Portugal	m (m)	m	25 (4.3)	12 (1.8)	10 (2.1)	5 (2.2)	12 (1.1)	m (m)	m (m)	m (m)	m (m)	m (m)
Sweden	m (m)	m	48 (2.6)	56 (2.3)	56 (1.6)	38 (1.9)	51 (0.9)	m (m)	m (m)	m (m)	m (m)	m (m)
Switzerland	1 733 (123.1)	1.4	43 (2.1)	43 (2.6)	38 (2.4)	25 (3.1)	38 (1.0)	113 (11.3)	85 (6.3)	98 (13.9)	67 (8.9)	95 (6.3)
United Kingdom	1 693 (152.9)	1.4	43 (1.6)	45 (2.1)	38 (2.0)	22 (1.7)	38 (1.0)	93 (8.8)	89 (11.6)	76 (9.2)	80 (19.4)	82 (5.7)
United States	1 680 (112.2)	1.4	35 (2.8)	41 (2.1)	43 (2.4)	28 (3.0)	38 (1.4)	139 (21.8)	95 (12.6)	76 (9.8)	60 (11.2)	96 (8.4)
WEI participant												
Chile	673 (73.4)	0.6	18 (1.7)	17 (1.6)	9 (1.7)	6 (1.0)	14 (0.7)	132.2 (28.9)	105.9 (17.9)	108.6 (26.6)	134.5 (46.5)	104 (11.4)

Note: Figures in brackets represent the sampling error.

1. Using benchmarks of 30 hours per week and 40 weeks per year for "equivalent" full-time participation.

Source: International Adult Literacy Survey, 1994-1998. See Annex 3 for notes on methodology.

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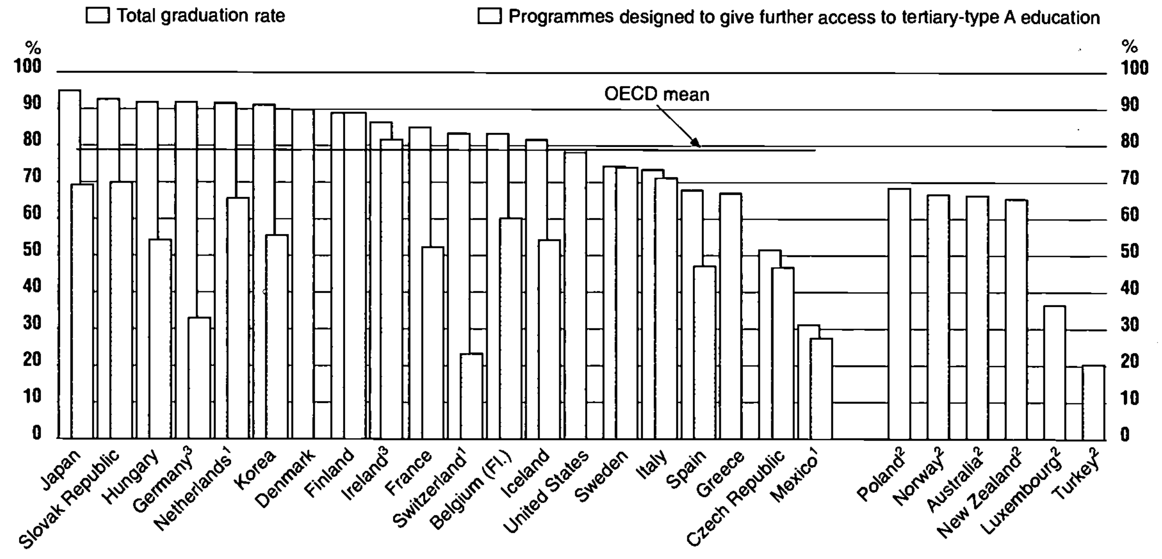
PARTICIPATION IN AND GRADUATION FROM SECONDARY EDUCATION

- The rate at which populations attain upper secondary education has risen steeply through successive age groups. In two thirds of the countries for which data are available, the ratio of upper secondary graduates to the population at the typical age of graduation exceeds 80 per cent. In Denmark, Germany, Hungary, Japan, Korea, the Netherlands and the Slovak Republic, graduation rates exceed 90 per cent. The challenge is now to ensure that the remaining fraction is not left behind, with the risk of social exclusion that this may entail.
- Among older age groups, women have attained lower levels of upper secondary education than men, but for younger people the pattern is now reversing. Today, graduation rates for women exceed those for men in most countries.
- In three out of four countries, the majority of upper secondary students are enrolled in programmes that are primarily designed to prepare them for a wide range of tertiary education, including theoretically-based studies at the tertiary level (ISCED 5A programmes). In content, however, many of these programmes contain pre-vocational or vocational elements as well.
- In more than half of the OECD countries, the majority of upper secondary students attend vocational or apprenticeship programmes.

Chart C2.1. **Upper secondary graduation rates (1999)**

Ratio of upper secondary graduates to population at typical age of graduation in public and private institutions, by type of programme



1. Gross graduation rate may include some double counting.
2. Total graduation rate not comparable due to double counting.
3. Year of reference 1998.

Countries are ranked in descending order of total upper secondary graduation rates.

Source: OECD. Table C2.2.

POLICY CONTEXT

This indicator shows graduation rates for different types of upper secondary and post-secondary non-tertiary programmes.

Rising skill demands in OECD countries have made upper secondary qualifications the minimum credential required for successful labour market entry. Upper secondary education serves as the foundation for higher (post-secondary) learning and training opportunities, as well as preparation for direct entry into the labour market. Although many countries do allow students to leave the education system at the end of the lower secondary level, young people in OECD countries who leave without an upper secondary qualification tend to face severe difficulties in entering the labour market (see Chapter E).

Although high upper secondary graduation rates do not guarantee that an education system has adequately equipped its graduates with the basic skills and knowledge necessary to enter the labour market, the upper secondary graduation rate is one indicator of how far education systems succeed in meeting the minimum requirements of the labour market.

It also shows how students are distributed by the educational destination of programmes.

While the successful graduation from upper secondary education is becoming the norm in most OECD countries, routes to it are becoming increasingly varied. Upper secondary programmes can differ in their curricular content, often depending on the type of education or occupation for which the programmes are intended to prepare students. Most upper secondary programmes in OECD countries are primarily designed to prepare students for further studies at the tertiary level. The orientation of these programmes can be general, pre-vocational or vocational. Besides the programmes primarily preparing students for further education, in most countries there are also upper secondary programmes designed to prepare students for direct entry to the labour market. Some countries, however, delay vocational training until after graduation from upper secondary education, although the level of these post-secondary programmes is often similar to what is offered at the upper secondary level elsewhere.

EVIDENCE AND EXPLANATIONS

Upper secondary graduation rates

In all but eight countries with comparable data, upper secondary graduation rates exceed 80 per cent...

Upper secondary graduation rates are estimated as the number of people, regardless of their age, who graduate for the first time from upper secondary programmes per 100 people at the age at which students typically graduate from upper secondary education (see Annex 1). These rates thus take into account students graduating from upper secondary education at the modal or typical graduation ages, as well as graduations by older students (*e.g.*, those in second chance programmes). With the exception of the Czech Republic, Greece, Italy, Luxembourg, Mexico, Spain, Sweden and the United States, upper secondary graduation rates exceed 80 per cent (Table C2.2).

*... and in **Denmark, Germany, Hungary, Japan, Korea, the Netherlands** and the **Slovak Republic** they exceed **90** per cent.*

In nine of the 20 countries for which comparable numbers of graduates are available, graduation rates are above 85 per cent, and in Germany, Hungary, Japan, Korea, the Netherlands and the Slovak Republic they exceed 90 per cent. Caution should be used in interpreting the graduation rates displayed in Table C2.2. In the Czech Republic, for example, the length of secondary programmes was recently extended, which leads to an underestimation of graduation rates. In contrast, graduation rates can be overestimated in countries such as the Netherlands and Switzerland, where it is not possible to net out those who are graduating from a second upper secondary programme.

The challenge is now to ensure that the remaining fraction is not left behind, with the risk of social exclusion that this may entail.

Some countries provide for second chance graduation by offering examinations rather than providing upper secondary programmes for adults. In the United States, students who do not successfully complete the last year of upper secondary education – a relatively large proportion – often take and pass a test of General Educational Development (GED) at a later point in time. This qualification is formally regarded as equivalent to an upper secondary qualification.

Upper secondary attainment levels have increased in almost all countries.

A comparison of graduation rates with the level of educational attainment among older age groups (indicator A2, Chart A2.2) indicates that there has been a marked increase in the percentage of people who graduate from upper secondary education.

Gender differences in graduation rates

Among older age groups, women have lower levels of education than men...

The balance of educational attainment among men and women in the adult population is unequal in most OECD countries (indicator A2, Chart A2.3): historically women did not have sufficient opportunities and/or incentives to reach the same level of education as men. Women are generally over-represented among those who did not proceed to upper secondary education and underrepresented at the higher levels of education.

... but for younger people the pattern is now reversing.

However, these differences are mostly attributable to the large gender differences in the attainment of older age groups and have been significantly reduced or reversed among younger age groups.

Today, graduation rates for women exceed those for men in most countries.

Today, graduation rates no longer show significant differences between men and women in many countries (Table C2.2). In 17 out of 21 OECD countries for which upper secondary graduation rates are available by gender, graduation rates for women exceed those for men, and in the Czech Republic, Denmark, Finland, Greece, Ireland, Italy, and Spain by 10 percentage points or more. In the majority of OECD countries, the gender ratio for upper secondary programmes designed to lead to further tertiary-type A education (ISCED 3A) strongly favours women.

Participation and graduation by the destination of programmes

Upper secondary programmes are classified according to the destination for which they have been designed to prepare students.

In most countries, students do not follow a uniform curriculum at the upper secondary level. One way to distinguish different types of curriculum is by the type of educational or labour market "career" for which a programme is designed to prepare students. The International Standard Classification of Education (ISCED) distinguishes three types of upper secondary programmes by programme "destination":

> **ISCED 3A**: programmes designed to allow direct access to tertiary programmes providing sufficient qualifications to gain entry into professions with high skill requirements or advanced research programmes (tertiary-type A).

ISCED 3B: programmes designed to provide direct access to tertiary programmes that focus on occupationally specific skills (tertiary-type B).

ISCED 3C: programmes not designed to lead directly to tertiary-type A or B programmes. These programmes are designed to prepare students directly for the labour market, post-secondary non-tertiary programmes (ISCED 4) or other upper secondary programmes.

In almost all OECD countries, more than half of students enter the labour market at the end of upper secondary education...

Direct access neither refers to a strict legal interpretation of the destinations of programmes nor to the actual destinations of students (which might be strongly influenced by the current labour market situation). Programmes are designated A, B, or C according to the orientation of the *design* of the curriculum, that is, according to the type of tertiary programme for which the curriculum of the upper secondary programme is intended to prepare students.

In almost all OECD countries, more than half of students leave formal education at the end of upper secondary education and enter the labour market. For the remaining students, upper secondary education is mainly a preparation for further study at the tertiary level.

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... but the majority of upper secondary students are enrolled in programmes leading to tertiary-type A qualifications in more than two thirds of the OECD countries.

In 21 out of 29 countries, the majority of students are enrolled in programmes designed to prepare participants for further education at the tertiary-type A level (Chart C2.2 and Table C2.1). In most countries, the entry rates to tertiary-type A education are significantly lower than the graduation rates from upper secondary programmes that are designed to prepare students for entry to tertiary-type A – implying that there is an underlying need for these programmes to prepare students for the transition to other forms of further education as well as for direct entry into the world of work.

In Germany and Switzerland, around 60 per cent of all students (48 per cent in Austria) are enrolled in programmes that provide access to further education at the tertiary-type B level. These programmes are primarily dual-system apprenticeship programmes. After graduating from these programmes, most students enter the labour market, as many of the tertiary-type B programmes require work experience before entry.

Participation in and graduation from vocational education

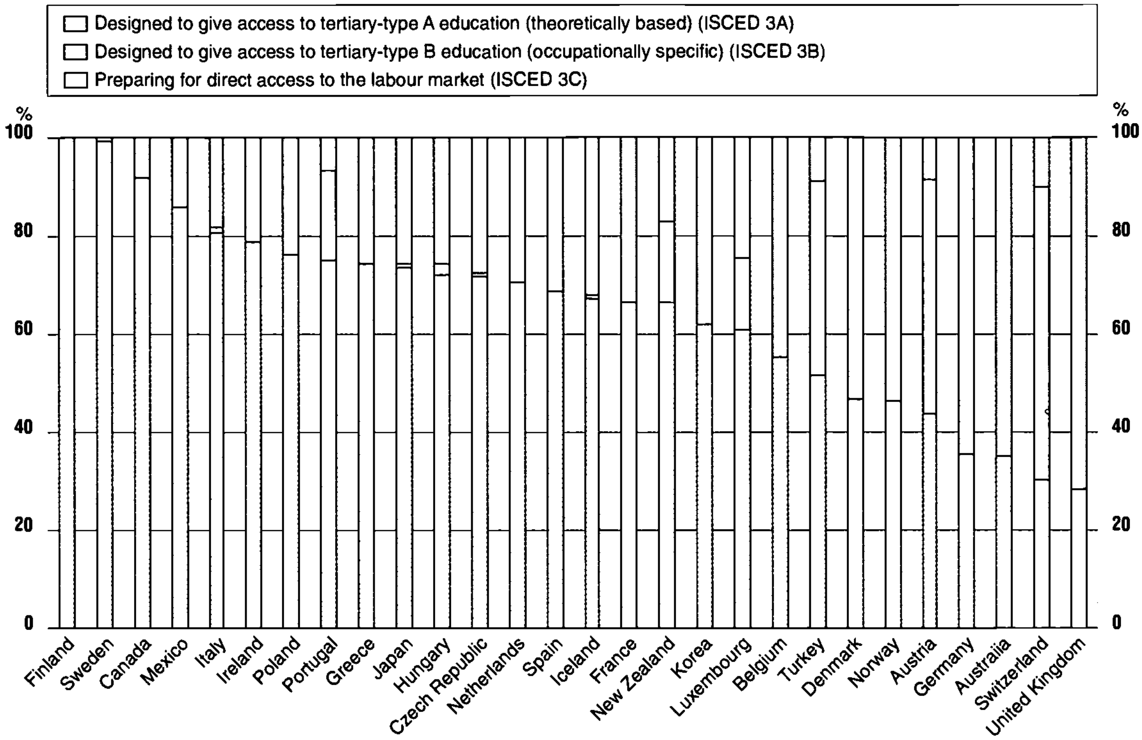
Programmes at the upper secondary level – irrespective of their destination – can also be subdivided into three categories based on the degree to which the programme is oriented towards a specific class of occupations or trades and leads to a labour-market relevant qualification:

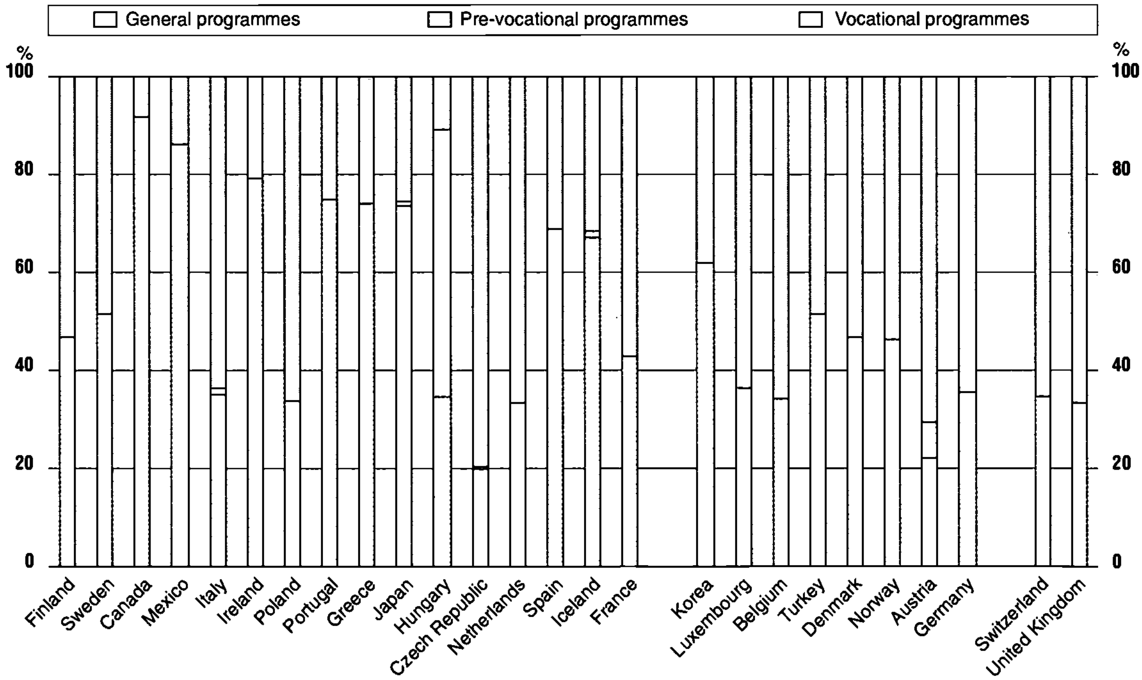
Type 1 (general) education programmes are not designed explicitly to prepare participants for specific occupations or trades, nor for entry into further vocational or technical education programmes.

Type 2 (pre-vocational or pre-technical) education programmes are mainly designed to introduce participants to the world of work and prepare them for entry into further vocational or technical education

Chart C2.2. **Upper secondary enrolment patterns (1999)**

Distribution of enrolment in public and private institutions, by programme destination and programme orientation





Countries are ranked in descending order of the proportion of students in ISCED 3A programmes.
Source: OECD. Table C2.1.

programmes. Successful completion of such programmes does not lead to a labour-market relevant vocational or technical qualification. At least 25 per cent of the programme content should be vocational or technical.

- **Type 3 (vocational) education** programmes prepare participants for direct entry, without further training, into specific occupations. Successful completion of such programmes leads to a labour-market relevant vocational qualification.

The degree to which a programme has a vocational or general orientation does not necessarily determine whether or not participants have access to tertiary education. In several countries, programmes with a vocational orientation are designed to prepare for further studies at the tertiary level, while in other countries a number of general programmes do not provide direct access to further education.

In more than half of the OECD countries, the majority of upper secondary students attend vocational or apprenticeship programmes.

In all OECD countries students can choose between vocational, pre-vocational and general programmes. In more than half of the OECD countries, the majority of upper secondary students attend vocational or apprenticeship programmes. In countries with dual-system apprenticeship programmes (such as Austria, Germany, Luxembourg, the Netherlands and Switzerland), as well as in Belgium, the Czech Republic, Italy, Poland, the Slovak Republic and the United Kingdom, 60 per cent or more of upper secondary students are enrolled in vocational programmes. The exception is Iceland, where the majority of students are enrolled in general programmes even though dual-system apprenticeship programmes are offered (Chart C2.2 and Table C2.1).

In most countries, vocational education is school-based, although in Austria, Iceland and the Slovak Republic about half of vocational programmes have combined school-based and work-based elements, and in Denmark, Germany, Hungary and Switzerland the majority of vocational programmes have both school-based and work-based elements.

Participation in and graduation from post-secondary non-tertiary programmes

Some post-secondary programmes can be considered similar to what is offered at the upper secondary level elsewhere.

Some educational programmes straddle the boundary between upper secondary and post-secondary education from an international point of view, even though they might clearly be considered upper secondary or post-secondary programmes in a national context. Although their content may not be significantly more advanced than upper secondary programmes, they serve to broaden the knowledge of participants who have already gained an upper secondary qualification. The students tend to be older than those enrolled at the upper secondary level.

Such programmes are here classified as post-secondary non-tertiary programmes. Typical examples of such programmes would be trade and vocational certificates in Canada and the United States, nursery teacher training in Austria and Switzerland or vocational training in the dual system for holders of general upper secondary qualifications in Germany. In most countries, post-secondary non-tertiary programmes are vocationally oriented.

In about half of OECD countries, a significant proportion of upper secondary graduates also graduate from a post-secondary non-tertiary programme, either instead of or in addition to tertiary education. In the Flemish Community of Belgium, Hungary and Ireland, more than 20 per cent of a typical age cohort complete a post-secondary non-tertiary programme (15 per cent in Germany) (Table C2.3).

In two-thirds of OECD countries with available data, the majority of post-secondary non-tertiary students graduate from ISCED 4C programmes, which are designed primarily to prepare graduates for direct entry into the labour market. Apprenticeships that are designed for students who have already graduated from an upper secondary programme are also included in this category. However, in the Czech Republic, the Flemish Community of Belgium, Germany, the Slovak Republic and Spain, the majority of post-secondary non-tertiary graduates are from ISCED 4A programmes, which are designed to provide direct access to tertiary-type A education.

DEFINITIONS AND METHODOLOGIES

Data refer to the school year 1998/1999 and are based on the UOE data collection on education statistics (details can be found in Annex 3).

Gross graduation rates for ISCED 3A, 3B and 3C programmes cannot be summed, as some individuals graduate from more than one upper secondary programme and would thus be counted twice. The same applies for graduation rates by programme orientation, *i.e.*, general or vocational. The unduplicated count of graduates is calculated by netting out those students who graduated from another upper secondary programme in a previous year. For some countries, however, an unduplicated count of ISCED 3 graduates is unavailable and graduation rates may be overestimated because graduates complete multiple programmes at the same level. These countries are marked with a footnote in the tables. A similar problem exists for post-secondary non-tertiary programmes.

Pre-vocational and vocational programmes include both school-based programmes and combined school and work-based programmes that are recognised as part of the education system. Entirely work-based education and training that is not overseen by a formal education authority is not taken into account.

Upper secondary graduates are those who successfully complete the final year of upper secondary education, regardless of their age. In some countries, successful completion requires a final examination; in others it does not.

Table C2.1. **Upper secondary enrolment patterns (1999)**

Enrolment in public and private institutions, by programme destination and programme orientation

	Distribution of enrolment by programme destination			Distribution of enrolment by programme orientation			
					Pre-vocational and vocational		
	ISCED 3A	ISCED 3B	ISCED 3C	General	Pre-vocational	Vocational	*of which:* combined school and work-based
OECD countries							
Australia	35.0	a	65.0	m	m	m	m
Austria	43.6	47.8	8.6	22.1	7.3	70.6	35.8
Belgium	55.1	a	44.9	34.3	a	65.7	4.0
Canada*	91.8	a	8.2	91.8	8.2	a	a
Czech Republic	71.8	0.5	27.7	19.8	0.5	79.7	27.3
Denmark	46.7	a	53.3	46.7	a	53.3	52.5
Finland	100.0	a	a	46.8	a	53.2	14.0
France	66.6	n	33.4	42.8	n	57.2	20.2
Germany	35.4	64.6	a	35.4	a	64.6	48.7
Greece	74.2	a	25.8	74.2	a	25.8	a
Hungary	72.2	2.2	25.7	34.5	54.5	11.0	11.0
Iceland	67.2	0.7	32.1	67.2	1.2	31.5	17.4
Ireland	78.7	a	21.3	79.4	20.6	a	x
Italy	80.6	1.2	18.2	35.3	1.2	63.5	a
Japan	73.6	0.8	25.7	73.6	0.8	25.7	a
Korea	62.1	a	37.9	62.1	a	37.9	a
Luxembourg	60.9	14.6	24.5	36.3	n	63.7	14.2
Mexico	86.0	a	14.0	86.0	a	14.0	a
Netherlands	70.7	a	29.3	33.4	a	66.6	a
New Zealand	66.3	16.7	17.0	m	m	m	m
Norway	46.4	a	53.6	46.4	a	53.6	x
Poland	76.0	a	24.0	33.9	a	66.1	m
Portugal	75.1	18.1	6.9	75.0	a	25.0	a
Slovak Republic	75.3	a	24.7	20.4	a	79.6	40.3
Spain	68.8	n	31.2	68.8	n	31.2	4.7
Sweden	46.8	a	0.4	49.9	a	47.3	m
Switzerland	30.3	59.6	10.1	34.6	a	65.4	56.8
Turkey	51.4	39.6	9.1	51.4	a	48.6	9.1
United Kingdom*	28.4	a	71.6	33.3	x	66.7	x
United States*	m	m	m	m	m	m	m
Country mean	**63.3**	**9.2**	**25.7**	**49.4**	**3.6**	**47.0**	**16.2**
WEI participants							
Argentina[1]	m	m	m	57.4	x	42.6	n
Brazil[1]	m	m	a	70.3	a	29.7	m
Chile[1]	57.8	42.2	a	57.8	a	42.2	0.5
China	100.0	a	a	43.4	x	56.6	x
Egypt	m	m	m	34.3	a	65.7	n
India	100.0	a	a	94.2	a	5.8	x
Indonesia[2]	60.6	39.4	a	60.6	a	39.4	a
Israel	95.3	x	4.7	57.9	a	42.1	4.7
Jordan	93.8	a	6.2	74.5	a	25.5	n
Malaysia[1]	10.6	a	89.4	88.4	n	11.6	x
Paraguay[1]	83.7	a	16.3	83.7	a	16.3	a
Peru[1]	100.0	x	a	75.7	24.3	a	n
Philippines[1]	100.0	a	a	100.0	a	a	a
Russian Federation	56.3	n	43.7	100.0	n	n	n
Thailand	71.6	28.4	a	71.6	a	28.4	m
Tunisia	m	m	m	93.0	n	7.0	x
Uruguay[1]	92.3	a	7.7	81.0	a	19.0	x
Zimbabwe	4.6	a	95.4	m	m	m	m

1. Year of reference 1998.
2. Year of reference 2000.
* See Annex 3 for notes.

Source: OECD.

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Table C2.2. **Upper secondary graduation rates (1999)**

Ratio of upper secondary graduates to total population at typical age of graduation (multiplied by 100) in public and private institutions, by programme destination, programme orientation and gender

	Total (unduplicated)			ISCED 3A (designed to prepare for direct entry to tertiary-type A education)		ISCED 3B (designed to prepare for direct entry to tertiary-type B education)		ISCED 3C (long) similar to duration of typical 3A or 3B programmes		ISCED 3C (short) shorter than duration of typical 3A or 3B programmes		General programmes		Pre-vocational/ Vocational programmes	
	M + W	Men	Women	M + W	Women	M + W	Women	M + W	Women	M + W	Women	M + W	Women	M + W	Women
OECD countries															
Australia	m	m	m	66	72	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 (Fl.)[2*]	83	82	85	60	63	a	a	23	21	13	17	33	38	63	64
Canada	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Czech Republic[4*]	52	44	59	47	56	n	n	n	n	5	4	13	15	43	49
Denmark	90	82	98	54	66	a	a	59	63	a	a	54	66	59	63
Finland	89	84	94	89	94	a	a	a	a	a	a	53	64	67	71
France	85	84	86	52	59	10	8	3	3	36	30	33	39	67	61
Germany[3]	92	90	94	33	36	59	58	a	a	a	a	33	36	59	58
Greece	67	58	76	59	62	a	a	20	16	a	a	59	62	20	16
Hungary[*]	92	91	93	54	61	2	2	x	x	34	27	24	30	71	65
Iceland	82	79	84	54	65	n	n	30	17	14	15	54	65	43	32
Ireland[3]	86	79	94	89	97	a	a	4	4	a	a	78	85	15	16
Italy[2]	73	69	79	71	77	1	2	a	a	22	23	28	37	65	63
Japan	95	92	97	69	73	a	a	25	24	x	x	69	73	27	26
Korea	91	91	91	56	53	a	a	36	38	a	a	56	53	36	38
Luxembourg[1]	60	57	63	36	42	7	7	17	14	n	n	26	30	34	33
Mexico[1]	31	29	33	28	29	a	a	4	4	x	x	28	29	4	4
Netherlands[1]	92	88	95	66	73	a	a	26	22	a	a	35	39	56	56
New Zealand[1]	m	m	m	65	70	19	23	15	17	x	x	m	m	m	m
Norway[1*]	m	m	m	67	82	a	a	66	48	m	m	67	82	66	48
Poland[1]	m	m	m	68	78	a	a	a	a	29	22	30	41	69	59
Portugal	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Slovak Republic	93	92	92	70	77	n	n	1	1	29	22	m	m	m	m
Spain	73	67	79	47	53	n	n	6	7	23	24	47	53	29	31
Sweden[*]	74	71	78	74	78	a	a	n	n	a	a	41	45	33	31
Switzerland[1]	83	86	81	23	28	48	36	12	17	a	a	m	m	m	m
Turkey[1]	m	m	m	20	19	19	16	m	m	m	m	20	19	19	16
United Kingdom	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
United States	78	79	77	m	m	m	m	m	m	m	m	m	m	m	m
Country mean	**79**	**76**	**82**	**57**	**63**	**7**	**6**	**15**	**14**	**11**	**10**	**42**	**48**	**45**	**43**
WEI participants[1]															
Argentina[3]	40	38	43	m	m	m	m	m	m	m	m	19	26	21	17
Brazil[5]	44	39	50	m	m	m	m	m	m	a	a	26	29	21	23
Chile[3]	56	52	61	31	36	25	26	a	a	a	a	31	36	25	26
China	37	39	36	m	m	m	m	m	m	a	a	17	15	20	21
India	47	m	m	47	m	a	a	a	a	a	a	m	m	m	m
Indonesia[6]	32	32	31	19	19	13	12	a	a	a	a	19	19	13	12
Israel	86	82	90	55	65	30	24	2	1	x	x	m	m	m	m
Jordan	73	69	77	69	76	a	a	4	1	a	a	55	63	17	14
Malaysia	62	49	76	8	11	a	a	53	63	a	a	60	74	2	1
Paraguay[3]	31	28	34	27	30	a	a	4	4	a	a	27	30	4	4
Peru[3]	57	57	57	57	57	x	x	a	a	a	a	44	45	13	12
Philippines[3]	57	52	63	57	63	a	a	a	a	a	a	57	63	a	a
Thailand	65	54	76	49	59	16	16	a	a	a	a	49	59	16	16
Tunisia	34	m	m	30	32	3	m	a	a	3	m	30	32	4	m

1. Graduation rate may include some double counting.
2. Short 3C programmes excluded.
3. Year of reference 1998.
4. Low figure due to extension of lower secondary education by one year in 1995.
5. Year of reference 1997.
6. Year of reference 2000.
* See Annex 3 for notes.

Source: OECD.

Table C2.3. **Post-secondary non-tertiary graduation rates (1999)**

Ratio of post-secondary non-tertiary graduates to total population at typical age of graduation (multiplied by 100) in public and private institutions, by programme destination and gender

	Total (unduplicated)			ISCED 4A (designed to prepare for direct entry to tertiary-type A education)		ISCED 4B (designed to prepare for direct entry to tertiary-type B education)		ISCED 4C	
	M + W	Men	Women	M + W	Women	M + W	Women	M + W	Women
OECD countries									
Australia	m	m	m	m	m	m	m	m	m
Austria	m	m	m	m	m	m	m	m	m
Belgium (Fl.)[1]	22.7	20.4	25.0	12.2	12.5	a	a	10.5	12.6
Canada	m	m	m	m	m	m	m	29.5	26.3
Czech Republic	12.4	13.0	11.8	10.7	10.4	a	a	1.7	1.3
Denmark	1.2	1.8	0.5	0.8	0.2	a	a	2.4	1.0
Finland	0.8	0.9	0.7	a	a	a	a	0.9	0.8
France	1.1	0.5	1.8	0.3	0.3	a	a	0.9	1.4
Germany[2]	15.4	16.3	14.4	9.9	9.6	5.4	4.8	a	a
Greece[1]	13.5	10.2	16.9	a	a	a	a	13.5	16.9
Hungary[1]	27.3	25.9	28.8	4.4	4.9	a	a	22.0	23.0
Iceland	5.1	7.8	2.4	a	a	a	a	5.1	2.4
Ireland[2]	25.8	13.5	38.6	a	a	a	a	25.8	38.6
Italy[1]	2.6	1.7	3.5	a	a	a	a	2.6	3.5
Japan	m	m	m	m	m	m	m	m	m
Korea	a	a	a	a	a	a	a	a	a
Luxembourg[1]	4.2	6.3	2.0	n	n	n	n	4.2	2.0
Mexico	a	a	a	a	a	a	a	a	a
Netherlands[1]	0.5	0.7	0.3	a	a	a	a	0.5	0.3
New Zealand[1]	7.0	4.7	9.6	0.5	0.7	1.8	2.1	4.8	6.8
Norway*	m	m	m	a	a	a	a	4.8	3.4
Poland[1]	12.4	7.7	17.4	a	a	12.4	17.4	a	a
Portugal	m	m	m	m	m	m	m	m	m
Slovak Republic	2.3	1.6	3.0	2.3	3.0	n	n	n	n
Spain	12.7	12.1	13.3	12.4	12.9	0.3	0.5	n	n
Sweden	m	m	m	m	m	m	m	0.5	0.4
Switzerland[1]	13.7	11.3	16.1	1.2	1.6	12.5	14.5	a	a
Turkey	a	a	a	a	a	a	a	a	a
United Kingdom	m	m	m	m	m	m	m	m	m
United States	6.5	5.5	7.6	a	a	a	a	6.5	7.6
Country mean	**8.5**	**7.4**	**9.7**	**2.4**	**2.4**	**1.4**	**1.7**	**5.4**	**5.9**
WEI participants[1]									
Argentina	a	a	a	a	a	a	a	a	a
Brazil	a	a	a	a	a	a	a	a	a
Chile	a	a	a	a	a	a	a	a	a
China	2.2	2.3	2.2	a	a	m	m	m	m
Indonesia	a	a	a	a	a	a	a	a	a
Jordan	a	a	a	a	a	a	a	a	a
Malaysia	0.9	0.8	1.1	x	x	x	x	x	x
Paraguay	a	a	a	a	a	a	a	a	a
Peru[2]	n	n	n	a	a	a	a	n	n
Philippines[2]	5.0	m	m	x	x	a	a	x	x
Tunisia	a	a	a	a	a	a	a	a	a
Uruguay[2]	a	a	a	a	a	a	a	a	a

1. Gross graduation rate may include some double counting.
2. Year of reference 1998.
* See Annex 3 for notes.

Source: OECD.

C2

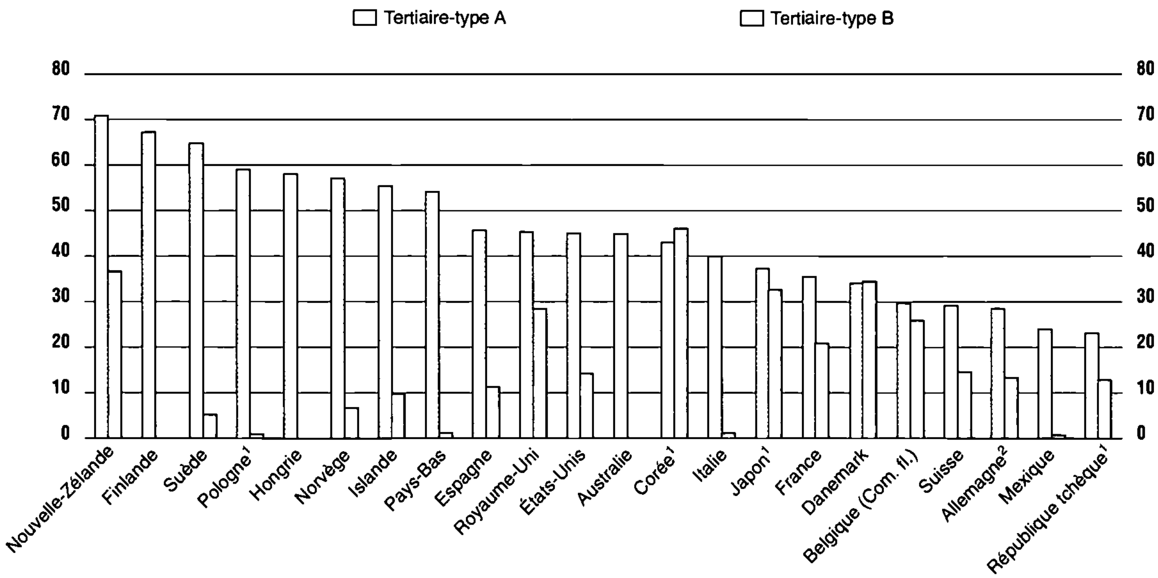
ACCESS TO AND PARTICIPATION IN TERTIARY EDUCATION

C3

- Today, four out of ten school leavers are likely to attend tertiary programmes which lead to the equivalent of a bachelors' or higher tertiary-type A degree during the course of their lives. In some countries this is as high as every second school leaver.
- With the exception of Canada, France and Germany, participation in tertiary education has grown in all countries between 1995 and 1999; in the majority of countries by more than 15 per cent and in Hungary, Korea and Poland by between 40 and 84 per cent.
- While the majority of tertiary students are enrolled in public institutions, in countries such as Japan, Korea, Luxembourg, the Netherlands and the United Kingdom privately managed institutions account for the majority of students.
- On average in OECD countries, a 17-year-old can now expect to receive 2.5 years of tertiary education, of which 2.0 years will be full-time.

Chart C3.1. **Entry rates to tertiary education (1999)**

Sum of net entry rates for each single year of age in tertiary-type A and tertiary-type B education, public and private institutions



Note: Net entry rates for type A and B programmes cannot be added due to double counting.
1. Entry rate for tertiary-type A and B programmes calculated as gross entry rate.
2. Entry rate for tertiary-type B programmes calculated as gross entry rate.
Countries are ranked in descending order of the total entry rates for tertiary-type A education.
Source: OECD. Table C3.1.

POLICY CONTEXT

High tertiary entry and participation rates help to ensure the development and maintenance of a highly educated population and labour force. Tertiary education is associated with better access to employment (indicator E1) and higher earnings (indicator E5). Rates of entry to both types of tertiary education are an indication, in part, of the degree to which the population is acquiring high-level skills and knowledge valued by the labour market in knowledge societies.

This indicator shows the percentage of youth that will enter different types of tertiary education during the course of their lives.

As students' awareness of the economic and social benefits of tertiary education has increased, so have rates of entry into both tertiary-type A and tertiary-type B education. Continued growth in participation, accompanied by a widening diversity in the backgrounds and interests of those aspiring to tertiary studies, will demand a new kind of provision. Tertiary institutions will be challenged not only to meet growing demand through an expansion of places offered, but also to adapt programmes, teaching and learning to match the diverse needs of the new generation of students.

Entry and participation rates reflect both the accessibility of tertiary education and the perceived value of attending tertiary programmes.

EVIDENCE AND EXPLANATIONS

Classification of tertiary programmes for international comparison

As participation at the tertiary level is increasing, programmes available to students are becoming more varied. Although universities and colleges of higher education in almost all countries are still the most important provider of tertiary education, this also takes place in other institutional settings. The institution of a programme can no longer serve as an adequate proxy for its "level". The revised International Standard Classification of Education (ISCED-97) focuses on a series of proxies for educational content in order to classify programmes in similar ways in all countries. Duration, programme orientation, the qualifications of teaching staff, and the level of further education for which programmes prepare graduates are some of these. First stage tertiary programmes are subdivided into tertiary-type A programmes, in many countries equivalent to the university-level, and tertiary-type B programmes, which focus on practical/technical/occupational skills.

ISCED-97, the international classification of educational programmes, accounts for increasing variety at the tertiary level.

Tertiary-type A programmes are largely theoretically-based and are designed to provide sufficient qualifications for entry to advanced research programmes and professions with high skill requirements, such as medicine, dentistry or architecture. Tertiary-type A programmes have a minimum cumulative theoretical duration (at tertiary level) of three years' full-time equivalent, although they typically last four or more years. These programmes are not exclusively offered at universities. Conversely, not all programmes nationally recognised as university programmes fulfil the criteria to be classified as tertiary-type A.

Tertiary-type A programmes are largely theoretically-based and are designed to prepare students for advanced research programmes and highly qualified professions.

Programmes of tertiary-type B are typically shorter than those of tertiary-type A and focus on practical, technical or occupational skills for direct entry into the labour market, although some theoretical foundations may be covered in the respective programmes as well. They have a minimum duration of two years full-time equivalent at the tertiary level.

Tertiary-type B programmes are designed for direct entry into the labour market.

Overall access to tertiary education

Forty-five per cent of today's young people will enter tertiary-type A programmes.

Today, four out of ten young people will enter tertiary-type A education during the course of their lives, assuming current entry rates continue into the future. In Hungary, Iceland, the Netherlands, Norway and Poland over 50 per cent of young people enter tertiary-type A education, and in Finland, New Zealand and Sweden two-thirds or more do (Table C3.1).

Other countries have considerably lower rates of first-time entry to tertiary-type A education: The estimated first-time entry rates for Belgium (Flemish Community), the Czech Republic, Germany, Mexico and Switzerland are 30 per cent or below.

Fifteen per cent of today's young people will enter tertiary-type B programmes.

The proportion of people who enter tertiary-type B education is generally smaller than that entering type A education. In 22 OECD countries with available data, 15 per cent of young people will on average enter tertiary-type B education. The range is from less than 1 per cent in Hungary, Mexico and Poland to over 30 per cent in Denmark, Japan, and New Zealand, and over 40 per cent in Korea (Table C3.1).

In Denmark, the Flemish Community of Belgium and Japan, wide access to tertiary-type B education counterbalances comparatively low rates of entry to type A education. Other countries, most notably Korea and the United Kingdom, have entry rates around the OECD average level for tertiary-type A education, as well as comparatively high rates of entry to type B education. New Zealand stands out as a country where entry rates at both levels are the highest among OECD countries.

Net rates of entry to tertiary education should be reviewed in the light of participation in post-secondary non-tertiary programmes, which are an important alternative to tertiary education in some countries (indicator C2).

People who enter tertiary-type B programmes may also enter tertiary-type A programmes later in their lives. First-time entry rates for each level of education cannot be added together to obtain overall tertiary-level entry rates because of the possible double counting of entrants.

Participation in tertiary education

Enrolment rates provide another view on participation in tertiary education. They reflect both the total number of individuals who enter tertiary education as well as the duration of tertiary studies. The sum of net enrolment rates for each single year of age, referred to as the "expectancy of tertiary education", is an overall measure of the amount of tertiary education undertaken by an age cohort rather than by individual participants. Unlike entry rates "expectancy of tertiary education" based on enrolments in tertiary-type A and tertiary-type B education can be summed.

In Australia, Finland, Korea, New Zealand, Norway and the United States, young people can expect to receive three years of tertiary education over the course of their lives.

On average in OECD countries, a 17-year-old can expect to receive 2.5 years of tertiary education, of which two years will likely be full-time. In Australia, Finland, Korea, New Zealand, Norway and the United States, 17-year-olds can expect to receive at least three years of tertiary education, full-time or part-time, over the course of their lives. In Finland and Korea, the expectancy of full-time studies exceeds three years. On the other hand, the expectancy of tertiary education is less than two years in the Czech Republic, Hungary, Mexico, Switzerland and Turkey (Table C3.2).

On average in OECD countries, expectancy of tertiary-type A education (1.9 years) is far higher than that of tertiary-type B education (0.4 years). The longer duration of studies in tertiary-type A programmes tends to increase the stock of enrolments, and thus the volume of resources required, all other things being equal (see indicator B1, Table B1.4). However, the majority of tertiary graduates emerge from tertiary-type B programmes in the Flemish Community of Belgium, Denmark and Korea (see indicator C4). Higher rates of participation in tertiary-type A programmes relative to tertiary-type B in these countries (Table C3.2) are a result of longer programme duration and not of higher entry rates.

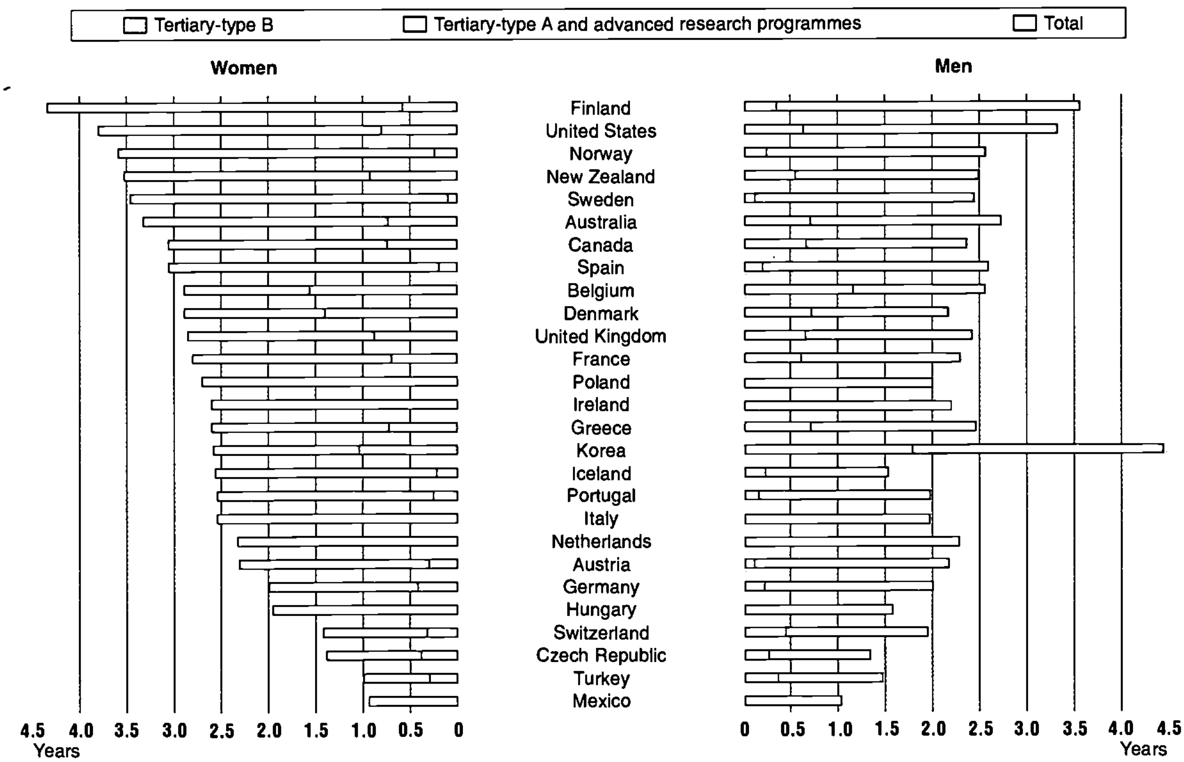
The longer duration of studies in tertiary-type A programmes tends to increase the stock of enrolments, and thus the volume of resources required.

While, in the majority of OECD countries, tertiary-type A programmes are both provided and administered by public institutions, in Luxembourg, the Netherlands and the United Kingdom the majority of students are enrolled in institutions that are privately managed (though predominantly drawing on public funds). In Japan, Korea, Mexico, Poland, Portugal and the United States, between 24 and 84 per cent of students are enrolled in institutions that are both privately managed and predominantly financed from private sources.

The majority of tertiary students are enrolled in public institutions, but in some countries privately managed institutions are important.

Chart C3.2. **Expected years in tertiary education (1999)**

Expected years of study under current conditions in public and private institutions, by gender



Countries are ranked in descending order of the expected years of tertiary education for women.
Source: OECD. Table C3.2.

Trends in participation and enrolment

Participation in tertiary education has grown in most countries between 1995 and 1999.

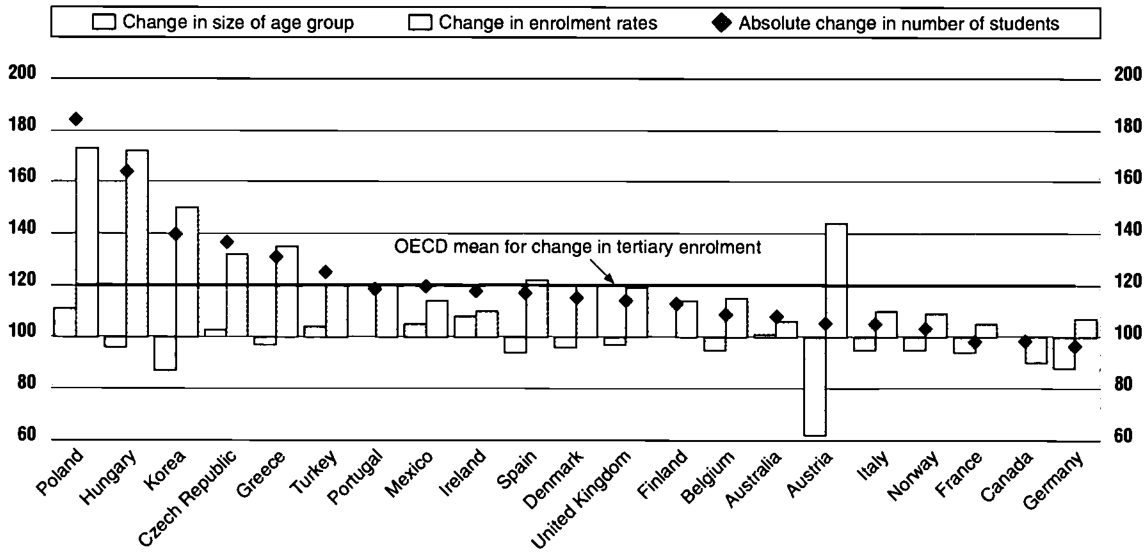
With the exception of Canada, France and Germany, participation in tertiary education has grown in all countries between 1995 and 1999; in the majority of countries by more than 15 per cent and in Hungary, Korea and Poland by 64, 40 and 84 per cent, respectively.

Growing demand, reflected in higher participation rates, is the main factor driving expansion in tertiary enrolments.

At the tertiary level, changes in enrolment rates are less closely tied to changes in the size of the relevant age cohort than is the case in primary and secondary education. Chart C3.3 decomposes the change in the number of students enrolled into two components: changes in cohort sizes and changes in participation rates. Growing demand, reflected in higher participation rates, is the main factor driving expansion in tertiary enrolments. Ireland, Mexico and Poland are the only countries where increases in population significantly contributed to an increase in tertiary enrolments, but in all cases increases in participation rates were even more significant. Conversely, the actual increase in tertiary students would have been significantly higher in many countries (in particular Austria and Korea) had there not been decreases in population.

Chart C3.3. **Change in the number of tertiary students in relation to changing participation rates and demography (1999)**

Index of change in the number of students at the tertiary level between 1995 and 1999, and the relative contribution of demographic changes and changing enrolment rates (1995 = 100)



Countries are ranked in descending order of the absolute change in number of tertiary students.
Source: OECD. Table C3.4.

Age of entrants

Traditionally, entry to tertiary-type A education has typically occurred immediately after the completion of upper secondary education. In a number of countries this is still the case. In the Flemish Community of Belgium, France, Italy and Mexico, for example, more than 80 per cent of all first-time entrants are under 21 years of age (Table C3.1). In other countries, the transition to the tertiary level is often delayed, in some cases by a period of time spent in the labour force. In these countries, first-time entrants to tertiary-type A programmes are typically older and show a much wider range of entry ages.

In the Flemish Community of Belgium, France, Italy and Mexico, more than 80 per cent of all entrants to tertiary-type A programmes are under 21 years of age...

In Denmark, Iceland and Sweden, for example, more than half of the students enter this level for the first time after the age of 22, and in Denmark and Iceland less than 20 per cent of first-time entrants are 21 years of age or younger (Table C3.1).

... while in Denmark and Iceland these are less than 20 per cent.

The proportion of older first-time entrants to tertiary-type A programmes may, among other factors, reflect the flexibility of these programmes and their suitability to students outside the typical or modal age cohort. Also, it reflects a specific view of the value of work experience as a background to higher education studies, which is characteristic of the Nordic countries in Europe and also common in Australia and New Zealand. In these countries, a sizeable proportion of new entrants is much older than the typical age of entry. In Australia, Denmark, Iceland, New Zealand, Norway and Sweden, more than 20 per cent of first-time entrants are 27 years of age or older.

☐ DEFINITIONS AND METHODOLOGIES

Table C3.1 shows the sum of net entry rates for all ages. The net entry rate of a specific age is obtained by dividing the number of first-time entrants to each type of tertiary education of that age by the total population in the corresponding age group (multiplied by 100). The sum of net entry rates is calculated by adding the net entry rates for each single year of age. The result represents the proportion of people of a synthetic age-cohort who enter the tertiary level of education, irrespective of changes in the population sizes and of differences between countries in the typical entry age. Table C3.1 shows also the 20th, 50th and 80th percentiles of the age distribution of first-time entrants, *i.e.*, the age below which 20 per cent, 50 per cent and 80 per cent of first-time entrants are to be found.

Data refer to the school year 1998/1999 and are based on the UOE data collection on education statistics (details can be found in Annex 3).

New (first-time) entrants are those enrolling at the relevant level of education for the first time. Foreign students who enrol in a country's education system for the first time in a post-graduate programme are considered first-time entrants.

Not all countries can distinguish between students entering a tertiary programme for the first time and those transferring between the different tertiary levels of education or repeating or re-entering a level after a period of absence. For this reason first-time entry rates for each level of tertiary education cannot be added up to total a tertiary-level entrance rate due to the double-counting of entrants that would result.

Table C3.2 shows the expected number of years for which 17-year-olds will be enrolled in tertiary education. It is calculated as the sum of net enrolment rates for people aged 17 and over (divided by 100). This measure is a function of both the number of people participating in tertiary education and of the duration of tertiary studies. Since the denominator also includes those who have never participated in tertiary education, the indicator cannot be interpreted as the average number of years an individual student requires to complete tertiary education.

Data for 1994/1995 are based on a special survey carried out amongst OECD member countries in 2000.

Table C3.4 shows the expected years of tertiary education for the academic year 1994/1995. The data on tertiary enrolment for 1994/1995 were obtained from a special survey carried out in 2000. Countries were asked to report the data according to the ISCED-97 classification.

Table C3.1. **Entry rates to tertiary education and age distribution of new entrants (1999)**

Sum of net entry rates for each single year of age in tertiary-type A and tertiary-type B education in public and private institutions, by gender

	Tertiary-type B			Tertiary-type A					
	Net entry rates			Net entry rates			Age at:		
	M + W	Men	Women	M + W	Men	Women	20th percentile[1]	50th percentile[1]	80th percentile[1]
OECD countries									
Australia	m	m	m	45	37	53	18.3	19.0	27.1
Austria	m	m	m	m	m	m	m	m	m
Belgium (Fl.)	26	21	31	30	29	30	18.3	18.7	20.0
Canada	m	m	m	m	m	m	m	m	m
Czech Republic[2*]	13	10	16	23	24	22	m	m	m
Denmark	34	24	46	34	32	36	21.1	23.2	29.8
Finland[*]	a	a	a	67	58	77	19.8	21.5	26.6
France	21	21	20	35	29	42	18.3	18.9	20.2
Germany[3*]	13	10	17	28	28	29	20.1	21.5	24.4
Greece	m	m	m	m	m	m	m	m	m
Hungary[*]	n	n	1	58	53	64	19.2	20.8	25.9
Iceland	10	10	9	55	36	75	21.1	23.0	>40
Ireland	m	m	m	m	m	m	m	m	m
Italy	1	1	1	40	35	46	19.2	19.7	20.7
Japan[2*]	33	22	44	37	46	28	m	m	m
Korea[2*]	46	48	44	43	48	37	m	m	m
Luxembourg	m	m	m	m	m	m	m	m	m
Mexico	1	1	1	24	26	22	18.3	19.1	20.9
Netherlands	1	1	1	54	51	57	18.6	19.9	23.6
New Zealand	37	27	46	71	59	82	18.7	21.9	>40
Norway	7	7	7	57	44	71	20.0	21.6	28.7
Poland[2*]	1	x	x	59	x	x	m	m	m
Portugal	m	m	m	m	m	m	m	m	m
Slovak Republic[3*]	3	1	4	35	35	35	18.6	19.5	21.3
Spain[*]	11	11	11	46	39	53	18.4	19.2	21.8
Sweden	5	5	5	65	54	77	20.2	22.6	31.7
Switzerland	15	16	13	29	32	26	20.2	21.7	26.3
Turkey	m	m	m	m	m	m	m	m	m
United Kingdom	28	28	29	45	43	48	18.5	19.6	26.1
United States	14	13	15	45	42	48	18.5	19.5	26.7
Country mean	**15**	**13**	**17**	**45**	**40**	**48**			
WEI participants									
Argentina	26	16	37	51	45	57	19.8	21.6	25.7
Chile[2]	15	15	14	37	39	35	m	m	m
China[2]	7	x	x	6	x	x	m	m	m
Indonesia	6	6	7	11	13	9	18.9	19.7	20.7
Israel[*]	27	25	30	49	43	55	21.5	23.7	27.4
Malaysia	10	11	9	13	11	15	19.5	20.4	21.0
Paraguay	1	1	1	m	m	m	m	m	m
Peru[2]	18	15	21	15	x	x	m	m	m
Philippines	a	a	a	31	27	35	m	m	m
Thailand[2]	20	20	21	35	32	38	22.3	m	m
Tunisia[2]	4	4	3	19	17	20	m	m	m
Uruguay[2]	17	8	26	26	20	32	m	m	m

1. 20/50/80 per cent of new entrants are below this age.
2. Entry rate for type A and B programmes calculated as gross entry rate.
3. Entry rate for type B programmes calculated as gross entry rate.
* See Annex 3 for notes.

Source: OECD. For notes on methodology see Annex 3.

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Table C3.2. **Expected years in tertiary education (1999)**

Expected years of study under current conditions in public and private institutions, by gender and mode of study

	Tertiary-type B education				Tertiary-type A education				All tertiary education (type A, B and advanced research programmes)			
	Full-time and part-time			Full-time	Full-time and part-time			Full-time	Full-time and part-time			Full-time
	M + W	Men	Women	M + W	M + W	Men	Women	M + W	M + W	Men	Women	M + W
OECD countries												
Australia	0.7	0.7	0.7	0.2	2.2	1.9	2.5	1.4	3.0	2.7	3.3	1.7
Austria	0.2	0.1	0.3	0.1	1.9	1.8	1.9	1.9	2.2	2.2	2.3	2.2
Belgium	1.4	1.2	1.6	1.1	1.4	1.4	1.3	1.3	2.7	2.6	2.9	2.4
Canada	0.7	0.7	0.7	0.6	2.0	1.7	2.3	1.4	2.7	2.4	3.1	2.0
Czech Republic*	0.3	0.3	0.4	0.3	1.0	1.0	0.9	0.9	1.4	1.3	1.4	1.3
Denmark	1.0	0.7	1.4	1.0	1.4	1.4	1.5	1.4	2.5	2.2	2.9	2.5
Finland	0.5	0.3	0.6	0.5	3.2	3.0	3.5	3.2	3.9	3.6	4.3	3.9
France	0.6	0.6	0.7	0.6	1.8	1.6	2.1	1.8	2.6	2.3	2.8	2.6
Germany*	0.3	0.2	0.4	0.3	1.7	1.8	1.6	1.7	2.0	2.0	2.0	2.0
Greece	0.7	0.7	0.7	0.7	1.8	1.7	1.9	1.8	2.5	2.5	2.6	2.5
Hungary*	n	n	n	n	1.7	1.5	1.9	1.0	1.8	1.6	2.0	1.0
Iceland	0.2	0.2	0.2	0.2	1.8	1.3	2.3	1.3	2.0	1.5	2.6	1.5
Ireland*	x	x	x	x	x	x	x	x	2.4	2.2	2.6	1.8
Italy	n	n	n	n	2.2	1.9	2.5	2.2	2.2	2.0	2.5	2.2
Japan	m	m	m	m	m	m	m	m	m	m	m	m
Korea	1.4	1.8	1.0	1.4	2.1	2.6	1.5	2.1	3.5	4.5	2.6	3.5
Luxembourg	m	m	m	m	m	m	m	m	m	m	m	m
Mexico	n	n	n	n	0.9	1.0	0.9	0.9	0.9	1.0	0.9	0.9
Netherlands	n	n	n	n	2.3	2.2	2.3	2.0	2.3	2.3	2.3	2.0
New Zealand	0.7	0.5	0.9	0.3	2.2	1.9	2.6	1.6	3.0	2.5	3.5	2.0
Norway	0.2	0.2	0.2	0.2	2.8	2.3	3.3	2.3	3.1	2.6	3.6	2.5
Poland	n	n	n	n	2.3	1.9	2.7	1.2	2.3	2.0	2.7	1.3
Portugal	0.2	0.1	0.3	m	2.0	1.8	2.2	m	2.3	2.0	2.5	m
Slovak Republic	m	m	m	m	m	m	m	m	m	m	m	m
Spain	0.2	0.2	0.2	0.2	2.5	2.3	2.8	2.3	2.8	2.6	3.1	2.6
Sweden*	0.1	0.1	0.1	0.1	2.7	2.2	3.2	1.5	2.9	2.4	3.5	1.7
Switzerland	0.4	0.4	0.3	0.1	1.2	1.4	1.0	1.1	1.7	1.9	1.4	1.4
Turkey	0.3	0.4	0.3	0.3	0.8	1.0	0.6	0.8	1.2	1.5	1.0	1.2
United Kingdom	0.8	0.6	0.9	0.3	1.8	1.7	1.9	1.4	2.6	2.4	2.9	1.7
United States	0.7	0.6	0.8	0.3	2.8	2.6	2.9	1.7	3.6	3.3	3.8	2.0
Country mean	**0.4**	**0.4**	**0.5**	**0.4**	**1.9**	**1.8**	**2.1**	**1.6**	**2.5**	**2.3**	**2.6**	**2.0**
WEI participants												
Argentina[1]	0.7	0.4	1.0	0.7	1.9	1.8	2.1	x	2.6	2.2	3.0	0.7
Brazil[1]	x	x	x	x	0.7	0.7	0.8	0.7	0.8	0.7	0.8	0.8
Indonesia[2]	0.1	0.1	0.1	0.1	0.4	0.4	0.3	0.4	0.5	0.6	0.4	0.5
Israel	0.5	0.5	0.6	0.5	2.1	1.7	2.4	1.6	2.7	2.3	3.1	2.2
Malaysia[1]	0.3	0.2	0.3	0.3	0.8	0.8	0.8	0.7	1.1	1.0	1.1	1.0
Paraguay[1]	0.1	0.1	0.2	0.1	m	m	m	m	m	m	m	m
Peru[1]	0.7	0.6	0.8	0.7	0.8	0.9	0.6	0.8	1.4	1.5	1.4	1.4
Philippines[1]	a	a	a	a	1.3	1.1	1.5	1.3	1.3	1.1	1.5	1.3
Thailand	0.4	0.4	0.4	0.4	1.3	1.2	1.4	0.6	1.7	1.5	1.8	1.0
Uruguay[1]	0.5	0.3	0.7	0.5	1.3	1.0	1.6	1.3	1.9	1.3	2.4	1.9

1. Year of reference 1998.
2. Year of reference 2000.
* See Annex 3 for notes.
Source: OECD.

Table C3.3. **Students in public and private institutions and full-time and part-time programmes in tertiary education (1999)**

Distribution of students, by mode of enrolment, type of institution and programme destination

	Mode of study				Type of institution					
	Tertiary-type B education		Tertiary-type A and advanced research programmes		Tertiary-type B education			Tertiary-type A and advanced research programmes		
	Full-time	Part-time	Full-time	Part-time	Public	Government-dependent private	Independent private	Public	Government-dependent private	Independent private
OECD countries										
Australia	31.1	68.9	62.8	37.2	98.8	1.2	a	100.0	a	a
Austria	63.6	36.4	100.0	a	64.8	35.2	n	96.5	3.5	n
Belgium*	77.3	22.7	94.5	5.5	a	a	a	a	a	a
Canada	85.4	14.6	68.6	31.4	100.0	n	n	100.0	n	n
Czech Republic	100.0	n	92.4	7.6	79.8	20.2	a	100.0	a	a
Denmark	100.0	a	100.0	a	99.7	0.3	a	100.0	a	a
Finland	100.0	a	100.0	a	79.5	20.5	a	89.7	10.3	a
France	100.0	a	100.0	a	73.7	9.3	17.0	90.2	0.8	9.0
Germany	84.9	15.1	100.0	a	63.6	36.4	x	100.0	a	a
Greece	100.0	a	100.0	a	100.0	a	a	100.0	a	a
Hungary	100.0	n	60.1	39.9	100.0	n	a	86.8	13.2	a
Iceland	81.6	18.4	71.0	29.0	58.8	41.2	n	98.2	1.8	n
Ireland*	62.1	37.9	87.3	12.7	92.7	a	7.3	94.1	a	5.9
Italy	100.0	a	100.0	a	54.2	a	45.8	88.2	a	11.8
Japan	96.7	3.3	92.0	8.0	9.4	a	90.6	26.1	a	73.9
Korea	100.0	a	100.0	a	14.0	a	86.0	23.5	a	76.5
Luxembourg	98.1	1.9	100.0	a	81.5	18.5	a	a	100.0	a
Mexico	100.0	a	100.0	a	100.0	a	a	71.3	a	28.7
Netherlands	67.3	32.7	83.2	16.8	9.9	90.1	a	32.0	68.0	a
New Zealand*	44.6	55.4	70.7	29.3	86.1	12.2	1.7	99.2	0.7	0.1
Norway	92.6	7.4	80.3	19.7	74.9	25.1	x	90.1	9.9	x
Poland	81.9	18.1	55.2	44.8	90.9	8.4	0.8	75.5	a	24.5
Portugal	m	m	m	m	66.2	a	33.8	67.0	a	33.0
Slovak Republic	56.4	43.6	75.8	24.2	97.5	2.5	a	100.0	a	a
Spain	99.4	0.6	91.8	8.2	78.8	14.4	6.8	88.9	n	11.1
Sweden	89.1	10.9	54.0	46.0	75.5	1.5	23.0	94.5	5.5	a
Switzerland	35.3	64.7	94.7	5.3	45.0	31.6	23.4	92.2	6.6	1.2
Turkey	100.0	a	100.0	a	x	a	x	x	a	x
United Kingdom	31.3	68.7	75.8	24.2	a	100.0	n	a	100.0	n
United States	42.9	57.1	58.8	41.2	92.6	a	7.4	65.5	a	34.5
Country mean	**80.1**	**19.9**	**85.1**	**14.9**	**71.0**	**16.7**	**12.3**	**77.5**	**11.4**	**11.1**
WEI participants										
Argentina[1]	100.0	a	m	m	62.5	27.0	10.5	84.9	x	15.1
Brazil[1]	m	a	100.0	a	m	a	m	39.4	a	60.6
Chile[1]	100.0	n	100.0	n	8.3	6.4	85.4	33.9	23.6	42.5
China	35.7	64.3	89.6	10.4	m	m	m	m	m	m
Indonesia[2]	100.0	a	100.0	a	22.8	a	77.2	13.2	a	86.8
Israel	100.0	m	80.3	19.7	19.6	80.4	x	12.8	80.4	6.8
Malaysia[1]	98.7	1.3	95.4	4.6	100.0	a	a	48.7	a	51.3
Paraguay[1]	100.0	a	m	m	65.8	a	34.2	m	m	m
Peru[1]	100.0	a	100.0	a	50.4	1.0	48.7	64.2	n	35.8
Philippines[1]	a	a	100.0	a	a	a	a	26.3	a	73.7
Russian Federation	74.5	25.5	58.3	41.7	100.0	a	m	91.7	a	8.3
Thailand	100.0	a	47.2	52.8	55.5	a	44.5	86.3	a	13.7
Tunisia	100.0	n	100.0	n	m	a	m	m	a	m
Uruguay[1]	100.0	a	100.0	a	88.8	a	11.2	88.9	a	11.1
Zimbabwe	100.0	x	100.0	n	m	m	a	100.0	a	a

1. Year of reference 1998.
2. Year of reference 2000.
* See Annex 3 for notes.
Source: OECD.

C3

Table C3.4. **Change in expected years of tertiary education and total enrolments (1995-1999)**

Expected years in tertiary education, based on head counts, and changes in total enrolment in tertiary education (1995 = 100) *in public and private institutions*

	Expected years of education (full-time and part-time)						Change in enrolment		
	Tertiary-type B education		Tertiary-type A education		All tertiary education (type A, B and advanced research programmes)		Total enrolment in tertiary education (1995 = 100)	Attributable to:	
	1995	1999	1995	1999	1995	1999		Change in population	Change in enrolment rates
Australia	0.7	0.7	2.0	2.2	2.8	3.0	108	101	106
Austria	0.2	0.2	1.6	1.9	1.6	2.2	106	62	144
Belgium	1.1	1.4	1.2	1.4	2.4	2.7	109	95	115
Canada	0.7	0.7	2.0	2.0	2.8	2.8	98	100	90
Czech Republic*	n	0.3	0.9	1.0	1.0	1.4	137	103	132
Denmark	0.8	1.0	1.3	1.4	2.1	2.5	115	96	120
Finland	0.9	0.5	2.4	3.2	3.5	3.9	113	100	114
France	m	0.6	m	1.8	2.5	2.6	98	94	105
Germany*	0.3	0.3	1.5	1.7	1.8	2.0	97	88	107
Greece	0.6	0.7	1.3	1.8	1.9	2.5	131	97	135
Hungary*	a	n	1.1	1.7	1.1	1.8	164	96	172
Iceland	m	0.2	m	1.8	m	2.0	m	m	m
Ireland*	x	x	x	x	2.1	2.4	118	108	110
Italy	m	n	m	2.2	m	2.3	105	95	110
Japan	m	m	m	m	m	m	m	m	m
Korea	0.9	1.4	1.5	2.1	2.4	3.5	140	87	150
Luxembourg	m	m	m	m	m	m	m	m	m
Mexico	x	n	0.8	0.9	0.8	0.9	120	105	114
Netherlands	m	n	m	2.3	m	2.3	m	m	m
New Zealand	m	0.7	m	2.2	m	3.0	m	m	m
Norway	0.2	0.2	2.6	2.8	2.8	3.1	103	95	109
Poland	n	n	1.3	2.3	1.4	2.3	184	111	173
Portugal	0.4	0.2	1.4	2.0	1.9	2.3	119	100	120
Slovak Republic	m	m	m	m	m	m	m	m	m
Spain	n	0.2	2.2	2.5	2.4	2.8	117	94	122
Sweden*	m	0.1	m	2.7	m	2.9	m	m	m
Switzerland	m	0.4	m	1.2	m	1.7	m	m	m
Turkey	0.3	0.3	0.7	0.8	1.0	1.2	125	104	120
United Kingdom	0.6	0.8	1.6	1.8	2.2	2.6	115	97	119
United States	m	0.7	m	2.8	m	3.6	m	m	m
Country mean	**0.5**	**0.5**	**1.5**	**1.9**	**2.0**	**2.5**	**120**	**97**	**123**

* See Annex 3 for notes.

Source: OECD. For notes on methodology see Annex 3.

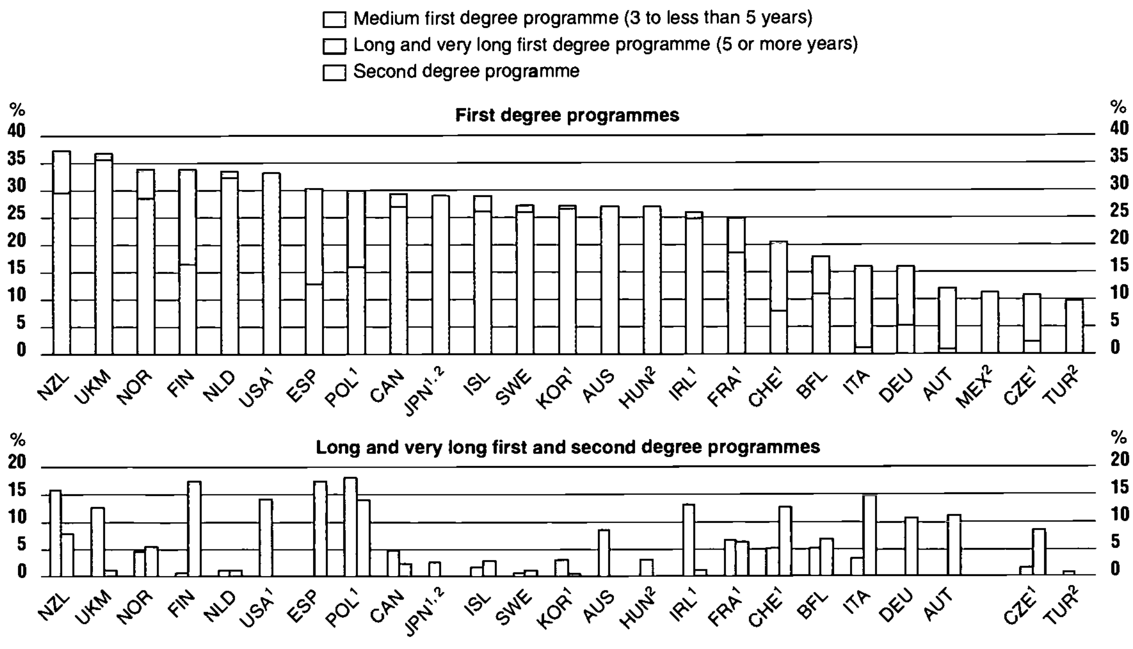
COMPLETION OF TERTIARY EDUCATION

- On average in OECD countries, 25 per cent of people at the typical age of graduation complete a first tertiary-type A programme – a figure which ranges from over 30 per cent in Finland, the Netherlands, New Zealand, Norway, Spain, the United Kingdom and the United States to 16 per cent or below in Austria, the Czech Republic, Germany, Italy, Mexico and Turkey
- Graduation rates for second tertiary-type A degrees range from less than 1 per cent to more than 18 per cent.
- Despite rapid increases in tertiary enrolment rates, the demand for tertiary graduates has risen faster than supply in most countries.
- The availability of shorter tertiary-type A programmes tends to improve access to tertiary education.
- On average in OECD countries, every third tertiary-type A graduate obtains a degree in the social sciences, law or business. The second most popular field is humanities, arts and education. The number of science graduates, from all levels of tertiary education, per 100 000 people in the labour force ranges from below 700 to more than 1 600.
- First and second tertiary-type A graduation rates for women exceed those for men in most countries but, in all OECD countries, men are still more likely than women to earn doctorates.

C4

Chart C4.1. **Graduation rates in tertiary-type A education (1999)**

Sum of graduation rates by single year of age (multiplied by 100) in public and private institutions, by duration of programme



1. Gross graduation rates.
2. Medium and long first degree programmes combined.

Countries are ranked in descending order of the sum of graduation rates in medium, long and very long first degree programmes.

Source: OECD. Table C4.1.

POLICY CONTEXT

This indicator shows graduation rates, as well as the distribution of graduates by fields of study.

Unlike measures of educational attainment, which relate to the stock of knowledge and skills in the population, tertiary graduation rates are an indicator of the current production rate of higher-level knowledge by each country's education system. Countries with high graduation rates at the tertiary level are the most likely to be developing or maintaining a highly skilled labour force.

Changing opportunities within the job market may affect the fields which students choose to study. In turn, the relative popularity of the various fields of study affects the demand for courses and teaching staff, as well as the supply of new graduates. The popularity of a particular field is likely to be driven by the job opportunities for graduates with skills in that field, as well as by relative earnings in different occupations and sectors.

Since specific skills and knowledge in science are the productive intellectual driving force in technology based economies, one measure of the expected productivity of an education system is the weight of science graduates at the tertiary level in the respective labour force. Differences between countries in the raw output of tertiary-level science graduates are likely to be influenced by the relative rewards in the labour market for different fields, as well as the degree to which the market drives field selection in a particular country.

EVIDENCE AND EXPLANATIONS

Graduation rates at the tertiary level

Tertiary programmes vary widely in structure and scope between countries.

Tertiary graduation rates are influenced both by the degree of access to tertiary programmes, as well as by the demand for higher skills in the labour market. Graduation rates are also affected by the way in which the degree and qualification structures are organised within countries. Tertiary-type A programmes, which are largely theoretically-based and designed to provide sufficient qualifications for entry to advanced research programmes and professions with high skill requirements, vary widely in structure and scope between countries. The duration of programmes leading to a first type-A qualification ranges from three years (*e.g.*, the Bachelor's degree in Ireland and the United Kingdom in most fields of study and the *Licence* in France) to five years or more (*e.g.*, the *Diplom* in Germany and the *Laurea* in Italy).

This indicator distinguishes between different categories of tertiary qualifications: *i)* first degrees at tertiary-type B level; *ii)* first degrees at tertiary-type A level; *iii)* second degrees at tertiary-type A level; and *iv)* advanced research degrees at the doctorate level (ISCED 6).

Countries differ in the way in which tertiary-type A studies are organised, both in universities and in other institutions. Whereas, in many countries, there is a clear distinction between first and second university degrees, *i.e.*, undergraduate and graduate programmes, this distinction is not known in other countries. In these latter countries, degrees that are comparable internationally at the "Master's level" are obtained through a single programme of long duration. To ensure international comparability, it is therefore necessary to compare degree programmes of similar cumulative duration, as well as completion rates for first-degree programmes.

Tertiary-type A programmes are subdivided in accordance with the theoretical duration of studies at the tertiary level to allow for comparisons that are independent of differences in national degree structures.

To allow for comparisons that are independent of differences in national degree structures, tertiary-type A degrees are subdivided in accordance with the total theoretical duration of studies at the tertiary level. For the purpose of this indicator, degrees are divided into those of medium duration (three to less than five years), long (five to six years) and very long duration (more than six years). Degrees obtained from short programmes of less than three years' duration are not considered comparable and are therefore not examined here. Second-degree programmes are classified according to the cumulative duration of the first and second-degree programme to allow for comparisons between long first-degree programmes and second-degree programmes.

On average in OECD countries, about 25 per cent of people at the typical age of graduation complete a first tertiary-type A programme. This figure ranges from over 30 per cent in Finland, the Netherlands, New Zealand, Norway, Spain, the United Kingdom and the United States, to 16 per cent or below in Austria, the Czech Republic, Germany, Italy, Mexico and Turkey (Table C4.1).

On average in OECD countries, 25 per cent of people at the typical age of graduation complete a first tertiary-type A programme.

On average, just over 5 per cent of people at the typical age complete a second tertiary-type A programme, and 1 per cent complete a programme leading to an advanced research degree (Table C4.1). Graduation rates for tertiary-type B programmes account, on average in OECD countries, for just over 12 per cent of an age cohort (Table C4.1).

To adapt and maintain competitiveness in response to changing consumer preferences and technological change, companies need to be able to draw on a skilled workforce. Skill levels, and in particular the supply of tertiary graduates, have risen significantly over the past years, as shown by indicators A2 and C3. However, in most countries, there is a notable bias towards better educated individuals in the labour market. Chart C4.2 shows the changes in the proportion of persons with a tertiary qualification in employment, and the changes in their share in the total working-age population over the period 1989 and 1996.

Despite rapid increases in tertiary enrolment rates...

The fact that most countries are located above the diagonal reveals that labour markets over the 1990s have benefited from more highly educated workers and that demand has grown faster than supply. Even in the country with the fastest growth in the number of tertiary graduates, Spain with 8.2 percentage points, the share of employed workers with tertiary qualifications has grown faster, namely by 10.8 percentage points. At the other extreme, in Germany, the supply of tertiary graduates grew by less

... demand for tertiary graduates has risen faster than supply in most countries.

than half a percentage point between 1989 and 1996, while demand grew by 2.3 percentage points over the same period (Chart C4.2).

Graduation rates by level of degree

Graduation rates for first tertiary-type A degree programmes of medium duration average 18.8 per cent...

On average in OECD countries, 18.8 per cent of a typical age-cohort complete a first tertiary-type A programme of medium duration (three to less than five years), such as the Bachelor's degree in the United States (Table C4.1).

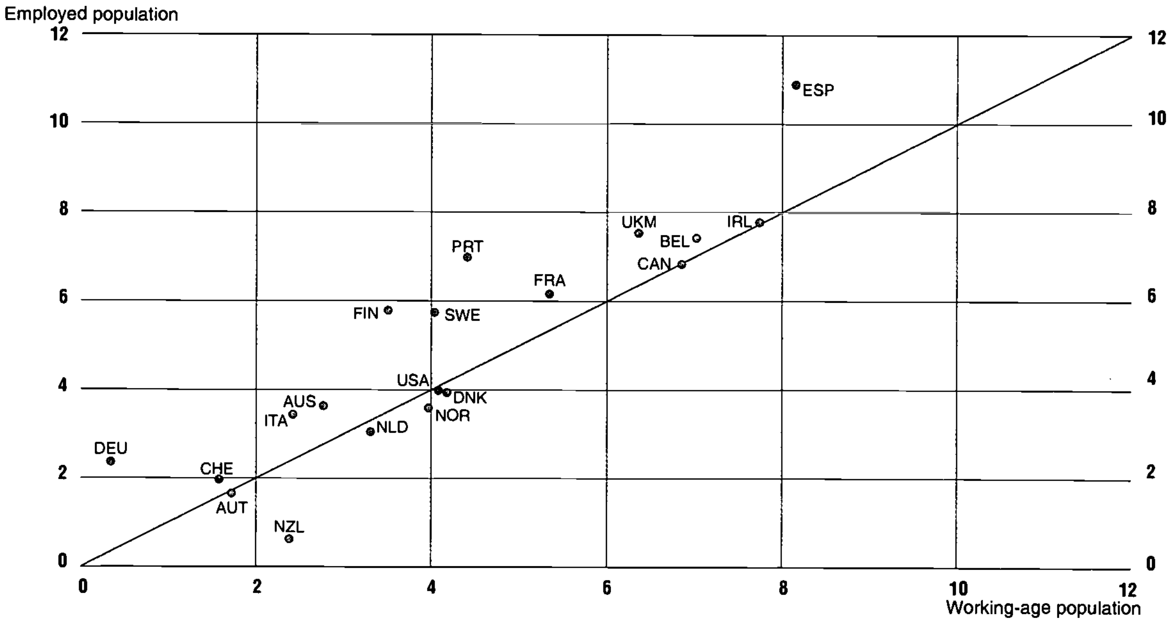
In the Netherlands, the United Kingdom and the United States, approximately every third person of the typical age of graduation obtains a degree from a tertiary-type A programme of medium duration. By contrast, graduation rates from programmes of less than five years duration are almost negligible (less than 3 per cent) in Austria, the Czech Republic and Italy (Table C4.1).

... and graduation rates for long and very long first programmes average 6.1 per cent.

Long and very long first tertiary-type A degree programmes, such as the German *Diplom* or the Italian *Laurea*, are often equivalent in total duration and academic level to second tertiary-type A degrees in countries such as Australia and the United States. Graduation rates for long and very long first tertiary-type A programmes average 6.1 per cent in OECD countries, and are 14 per cent or above in Finland, Italy, Poland, the Slovak Republic and Spain

Chart C4.2. **Human capital growth in the total working-age population and in the employed population (1989-1996)**

Percentage point change in the proportion of individuals with tertiary qualifications[1] in the working-age population and in the employed population[2]



1. Data were classified according to ISCED-76.
2. "Working age population" and "employed population" refer to individuals between 25 and 64 years of age.

Source: OECD Economic Outlook, June 2000. Table C4.5.

(Table C4.1). These rates range from 8 to 12 per cent in Austria, the Czech Republic, Germany and Switzerland (Table C4.1).

The availability of shorter tertiary-type A programmes tends to improve access to tertiary education.

It appears that countries in which the tertiary education system offers only long first tertiary-type A programmes generally have significantly lower overall tertiary-type A graduation rates than those that also offer shorter tertiary-type A programmes. In OECD countries where the majority of first degrees are obtained in programmes of medium duration, graduation rates for all first-degree programmes average around 28 per cent of a typical age cohort. On the other hand, OECD countries which do not offer short programmes, or which primarily offer long programmes, have an average graduation rate of 20 per cent.

Graduation rates for second tertiary-type A degrees range from less than 1 per cent to more than 18 per cent.

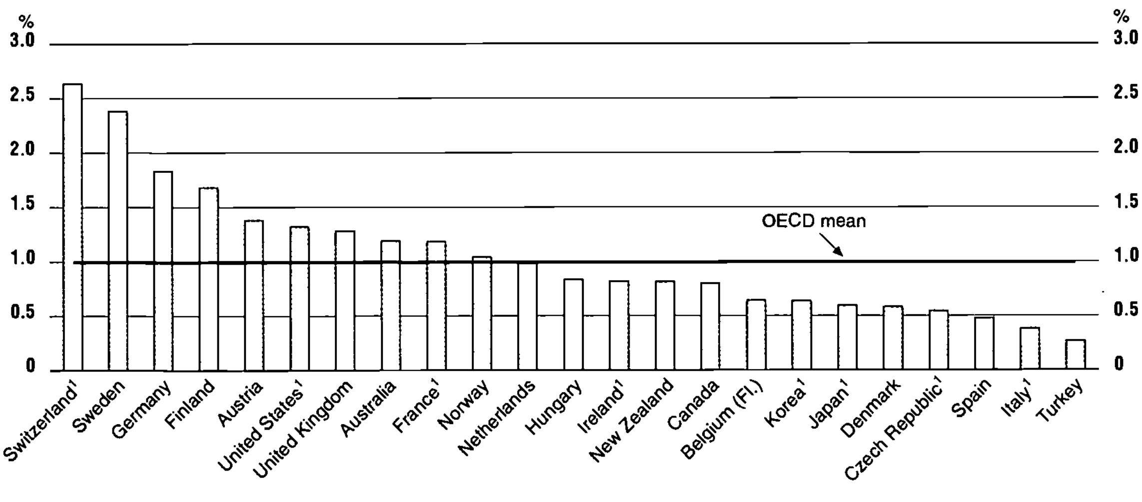
Graduation rates for second-degree programmes at the tertiary-type A level, such as the Master's in the United States, range from less than 1 per cent in Austria, Finland, the Slovak Republic, Sweden and Turkey to around 12 or more in Ireland, New Zealand, Poland, the United Kingdom and the United States. The OECD average is 5.3 per cent. In countries that offer primarily long first tertiary-type A programmes, second degrees are not common or are not offered at all. On average, one in one hundred people in the modal or typical age cohort in OECD countries obtains an advanced research qualification, such as a Ph.D. In Finland and Germany, the figure is slightly less than 2 per cent; in Sweden and Switzerland, it is around 2.5 per cent (Table C4.1).

Graduation rates at the tertiary-type B level range from below 1 to around 30 per cent.

Tertiary-type B programmes are more occupationally-oriented and lead to direct labour market access. The programmes are typically of shorter duration than type A programmes (typically two to three years). Generally they are not deemed to lead to university-level degrees.

Chart C4.3. **Graduation rates for advanced research programmes (1999)**

Sum of graduation rates for each single year of age (multiplied by 100) in public and private institutions



1. Gross graduation rates.

Countries are ranked in descending order of graduation rates for advanced research programmes.

Source: OECD. Table C4.1.

On average in OECD countries, 12.2 per cent of an age cohort obtain tertiary-type B first-qualifications. The highest graduation rates, more than 22 per cent, can be found in the Denmark, Finland, the Flemish Community of Belgium, Japan and Korea, where graduation rates of tertiary-type B programmes in some cases exceed those of type A programmes. The lowest tertiary-type B graduation rates are in Italy, the Netherlands and Poland, which have only one graduate for every 100 people at the typical graduation age (Table C4.1).

Graduation rates by field of study

On average in OECD countries, every third tertiary-type A graduate obtains a degree in the social sciences, law or business.

In 19 of the 26 countries providing data, the largest concentration of tertiary-type A qualifications awarded is in the field of social sciences, law and business (Table C4.3). On average in OECD countries, every third tertiary-type A graduate obtains a degree in the social sciences, law or business. The percentage of tertiary-type A qualifications awarded in the social sciences, law and business ranges from 25 per cent or below in Korea, Norway and Sweden, to over 46 per cent in Mexico and Poland.

The second most popular fields are the humanities, arts and education.

Typically, one out of every three or four students graduates from the fields of humanities, arts or education. There is less variation between countries in graduation from science-related fields than in overall graduation rates.

The percentage of students in science-related fields (engineering, manufacturing and construction, life sciences, physical sciences and agriculture, mathematics and computing, but not including health and welfare) ranges from less than 19 per cent in Norway, Iceland and the United States, to over 33 per cent in Finland, Germany and Korea.

Individual preferences, admission policies and degree structures influence the prevalence of the different fields of study.

The distribution of qualifications awarded by field of study is driven by the relative popularity of these fields among students, the relative number of students admitted to these fields in universities and equivalent institutions, and the degree structure of the various disciplines in a particular country.

Part of the variation in graduation rates between countries (Table C4.1) can also be accounted for by differences in the number of tertiary-type A degrees earned in the fields of education and the humanities. Countries with high graduation rates, on average, have a higher proportion of graduates in education and humanities and a lower proportion of graduates in science-related fields. In other words, there is less variation in graduation rates in science-related fields between countries than in overall graduation rates.

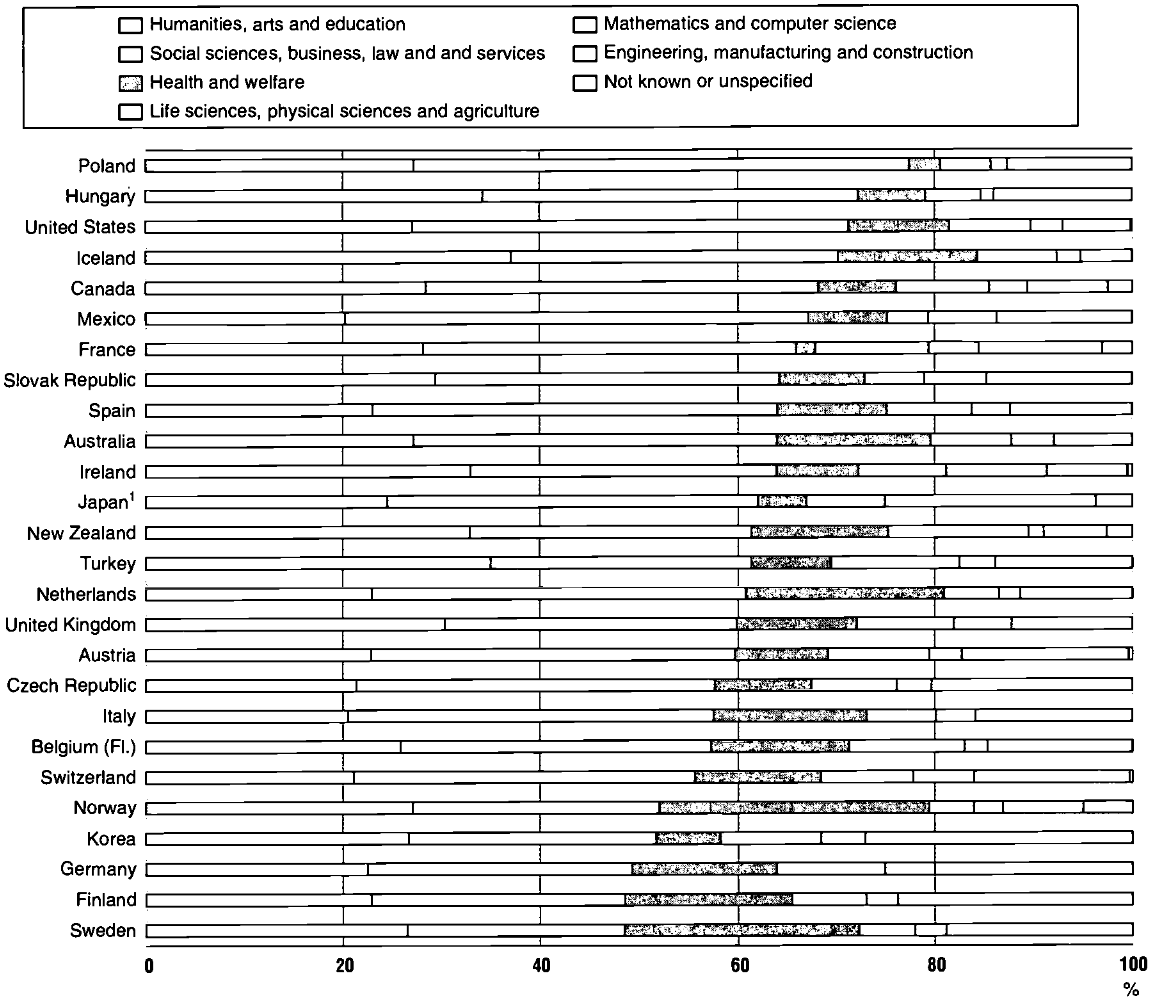
Social sciences, law and business, and education are also popular at the tertiary-type B level.

The picture is much the same for tertiary-type B education, where programmes are more occupationally oriented: the combined field of the social sciences, law and business has the largest concentration of graduates (31.6 per cent), followed by the combined field of the humanities, arts and education (22.4 per cent). However, health and welfare graduates are more common at this level than engineering, manufacturing and construction graduates (21.8 and 15.5 per cent respectively).

The selection of a field of study at this level is heavily dependent on opportunities to study similar subject matter, or to prepare for similar occupations at the post-secondary non-tertiary or tertiary-type A level. For example, if nurses in a particular country were trained primarily in tertiary-type B programmes, the proportion of students graduating with

Chart C4.4. **Graduates by field of study (1999)**

Graduates from tertiary-type A education and advanced research programmes in public and private institutions, by field of study



1. Mathematics and computer science are included in the category "life sciences, physical sciences and agriculture".
Countries are ranked in descending order of the proportion of qualifications in humanities, arts and education, and social sciences, business, law and services.
Source: OECD. Table C4.3.

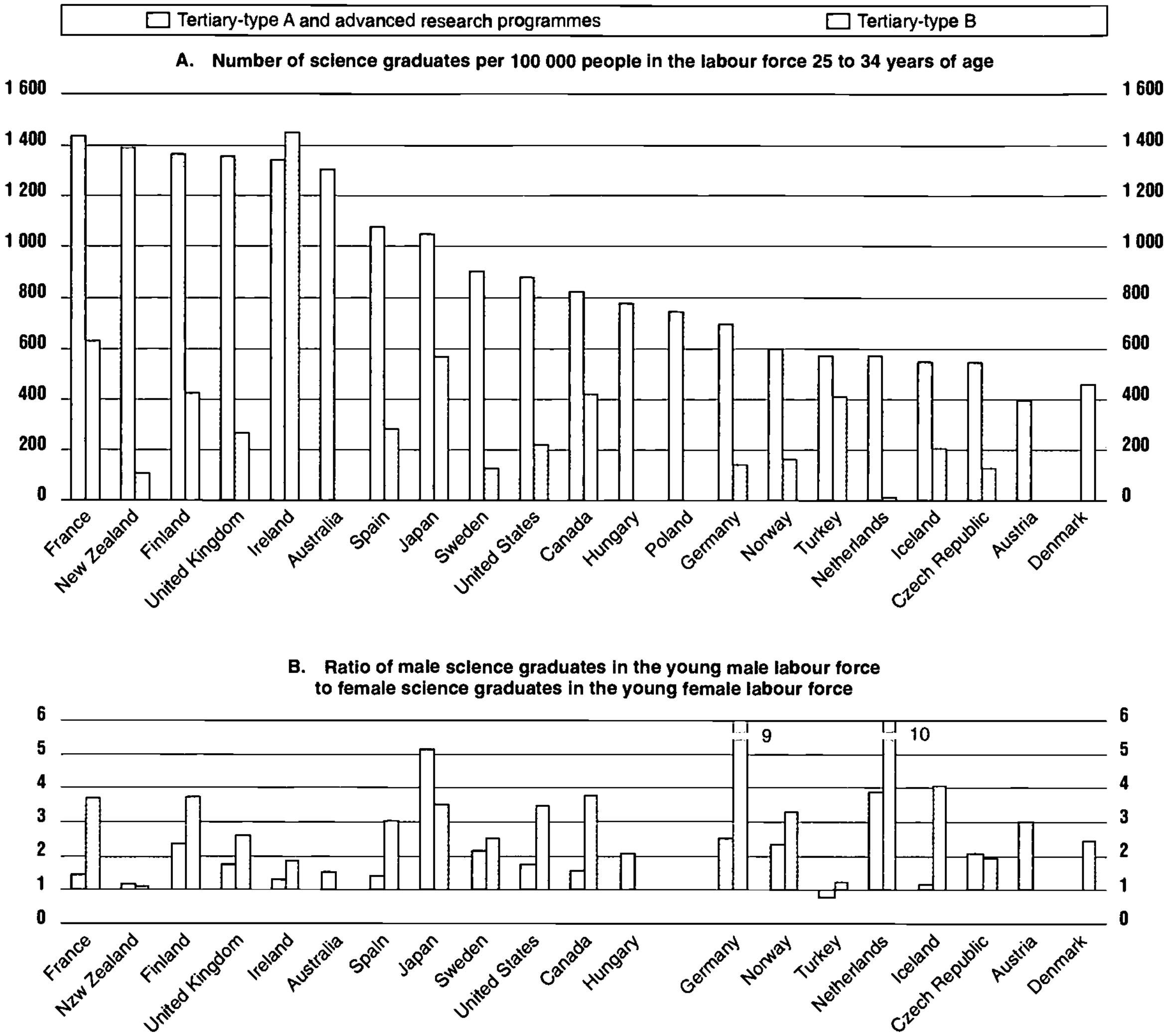
qualifications in medical sciences from that level would be higher than if nurses were primarily trained in upper secondary or tertiary-type A programmes.

Science graduates and the labour force

The number of science graduates per 100 000 people in the labour force ranges from below 700 to more than 1 600.

Comparing the number of science graduates with the number of 25 to 34-year-olds in the labour force provides another way of gauging recent output of high-level skills by different education systems. The number of science graduates per 100 000 people in the labour force ranges from below 700 in the Czech Republic, Mexico and the Netherlands, to above 1 600 in Finland, France, Ireland, Japan and the United Kingdom (Table C4.4). This indicator does not, however, provide information on the number of graduates

Chart C4.5. **Science graduates in the youth labour force (1999)**



Countries are ranked in descending order of the number of science graduates from tertiary-type A education and advanced research programmes.
Source: OECD. Table C4.4.

actually employed in scientific fields or, more generally, those using their degree-related skills and knowledge in their employment. Taking the OECD average, the number of tertiary science graduates is almost three times higher for tertiary-type A education and advanced research programmes than for tertiary-type B education.

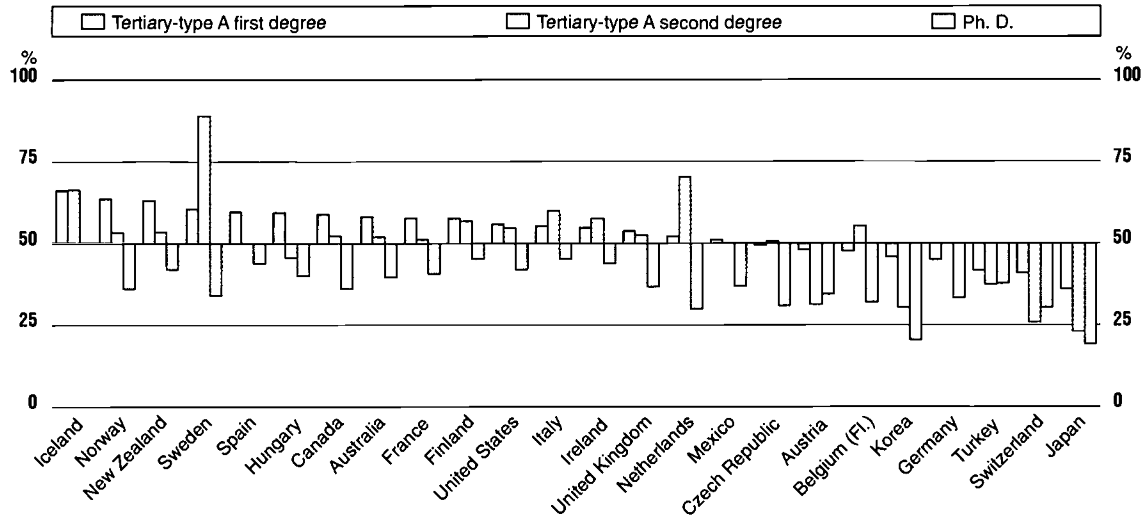
Gender differences in tertiary graduation

Tertiary-type A graduation rates for women equal or exceed those for men in most countries...

The tertiary-type A graduation rates for women equal or exceed those for men in 17 out of 25 OECD countries (Chart C4.6). On average in OECD countries, 53 per cent of all first tertiary-type A graduates are women.

Chart C4.6. **Proportion of tertiary qualifications awarded to women (1999)**

In public and private institutions, by level of tertiary education



Countries are ranked in descending order of the percentage of first tertiary-type A degrees that are awarded to women.
Source: OECD. Table C4.5.

... except in Austria, Belgium (Flemish Community), Germany, Japan, Korea, Switzerland and Turkey.

In Iceland, New Zealand, Norway and Sweden, the proportion of women exceeds 60 per cent – though this proportion is 45 per cent or below in Germany, Japan, Switzerland and Turkey. Women are also more likely to obtain second tertiary-type A degrees – 52 per cent of all second tertiary-type A degrees are awarded to women (Table C4.5).

In OECD countries, men are still more likely than women to earn doctorates.

Men remain more likely than women to obtain advanced research qualifications in OECD countries (Table C4.5). Graduation rates from advanced research, *e.g.*, Ph.D. programmes, are lower for women than for men in all countries. On average in OECD countries, nearly two-thirds of all graduates at this level are men. In Japan, 81 per cent of advanced research qualifications are awarded to men. This gender gap can be observed in all fields of study, and is even more pronounced in the humanities and the medical sciences, the fields of study that have the highest proportions of women among first university graduates in all countries.

DEFINITIONS AND METHODOLOGIES

Data on graduates refer to the academic year 1998/1999 and are based on the UOE data collection on education statistics and the World Education Indicators Pilot Project, administered in 2000 (details can be found in Annex 3).

Tertiary graduates are those who obtain a tertiary-type A or tertiary-type B qualification or equivalent in the specified reference year. This indicator distinguishes between different categories of tertiary qualifications: *i)* first qualifications at the tertiary-type B level; *ii)* first tertiary-type A (ISCED 5A); *iii)* second tertiary-type A qualifications (ISCED 5A); and *iv)* advanced research degrees of doctorate standard. For some countries, data are not available for the categories requested. In such cases, the country has assigned graduates to the most appropriate category. Tertiary-type A degrees are also subdivided in accordance with the total theoretical duration of studies at the level of ISCED 5A, to allow for comparisons that are independent of differences in national degree structures (see above).

Table C4.1 generally presents net graduation rates. In the case of countries that are able to provide information on graduates by single year of age, this rate is calculated as the sum of age-specific graduation rates. The net graduation rate can be interpreted as the percentage of people within a virtual age cohort who obtain a tertiary qualification, thus being unaffected by changes in population size or typical graduation age. Gross graduation rates are presented for those countries that cannot provide such detailed data. Net graduation rates are less affected by changes in the population size over time, but gross graduation rates have been tested for their robustness against demographic changes over time before being compared with net graduation rates in this publication. In order to calculate gross graduation rates, countries identify the age at which graduation typically occurs. The graduates themselves, however, may be of any age. The number of graduates is then divided by the population at the typical graduation age (see Annex 1). In many countries, defining a typical age of graduation is difficult, however, because graduates are dispersed over a wide range of ages.

Table C4.5 shows the percentage distribution of qualifications among women by subject category. Tertiary graduates who receive their qualification in the reference year are divided into categories based on their subject of specialisation. These figures cover graduates from all tertiary degrees reported in Table C4.1.

Labour force data used in Table C4.4 are taken from the OECD Labour Force database, compiled from National Labour Force Surveys and European Labour Force Surveys.

Table C4.1. **Graduation rates in tertiary education (1999)**

Sum of net graduation rates by single year of age (multiplied by 100) in public and private institutions, by type of programme and duration of programme

	Tertiary-type B	Tertiary-type A					Advanced research programmes
	All first degree programmes	Medium first degree programmes (3 to less than 5 years)	Long first degree programmes (5 to 6 years)	Very long first degree programmes (more than 6 years)	Short second degree programmes (less than 6 years)	Long second degree programmes (6 years or longer)	Ph.D or equivalent
OECD countries							
Australia	m	27.0	a	a	8.5	a	1.2
Austria	m	0.9	11.1	n	n	0.1	1.4
Belgium (Fl.)	25.4	10.9	5.8	1.1	4.9	0.2	0.6
Canada	12.6	26.9	1.4	1.0	4.7	x	0.8
Czech Republic[1, •]	5.8	2.2	8.6	a	1.7	a	0.5
Denmark	23.3	m	m	m	m	m	0.6
Finland[•]	22.3	16.4	17.5	a	a	0.7	1.7
France[1]	17.9	18.5	5.6	0.8	6.7	a	1.2
Germany	11.8	5.2	10.8	a	a	a	1.8
Greece	m	m	m	m	m	m	m
Hungary	m	26.9	x	a	3.1	x	0.8
Iceland[•]	8.4	26.0	2.9	a	1.8	a	n.
Ireland[1, 2]	21.0	24.8	1.2	x	13.1	x	0.8
Italy	0.3	1.1	14.9	a	2.3	1.0	0.4
Japan[1]	29.9	29.0	x	a	a	2.6	0.6
Korea[1]	31.2	26.5	0.6	a	3.0	a	0.6
Luxembourg	m	m	m	m	m	m	m
Mexico	m	11.2	x	x	m	m	m
Netherlands	0.9	32.3	1.2	a	1.2	a	1.0
New Zealand	10.0	29.5	7.2	0.6	15.9	n	0.8
Norway[•]	5.8	28.5	2.5	2.9	1.8	2.8	1.0
Poland[1]	0.8	15.9	14.0	a	18.2	a	m
Portugal	m	m	m	m	m	m	m
Slovak Republic[1]	2.5	5.3	14.4	n	n	n	0.5
Spain	5.4	12.8	17.5	n	x	m	0.5
Sweden[•]	2.7	25.9	1.3	a	0.6	a	2.4
Switzerland[1]	19.0	7.8	11.8	0.9	3.9	1.2	2.6
Turkey	4.4	9.6	x	a	0.8	a	0.3
United Kingdom	11.4	35.6	1.2	n	12.7	x	1.3
United States[1]	8.6	33.2	a	a	12.1	2.2	1.3
Country mean	12.2	18.8	5.8	0.3	4.8	0.5	1.0
WEI participants							
Argentina[1, 2]	10.0	x	7.5	x	x	x	0.1
Brazil[1, 3]	x	8.9	x	x	x	x	0.6
Chile[1, 2]	10.8	7.8	8.7	0.2	n	n	0.8
China[1]	m	m	a	a	a	a	m
Indonesia[1, 4]	9.1	3.2	1.5	1.8	a	a	0.2
Israel	m	27.6	a	a	8.8	a	0.9
Malaysia[1]	5.3	6.9	0.1	x	x	x	0.8
Paraguay[1, 2]	2.5	m	m	m	m	m	m
Peru[1, 2]	3.1	a	7.6	x	a	a	x
Philippines[1, 2]	a	20.0	x	x	x	x	0.4
Russian Federation[1]	m	m	26.1	m	m	m	m
Sri Lanka[1, 2]	m	1.6	0.3	n	n	n	0.6
Thailand[1]	20.0	13.1	x	n	m	m	2.0
Tunisia[1]	1.9	7.3	a	a	1.2	n	m
Uruguay[1, 2]	3.8	1.7	2.1	2.5	x	x	1.1

Note: Short tertiary-type A degrees of a duration of less than three years are excluded from this indicator.
1. Gross graduation rate. Calculated as the ratio of graduates to total population at typical age of graduation (multiplied by 100).
2. Year of reference 1998.
3. Year of reference 1997.
4. Year of reference 2000.
• See Annex 3 for notes.
Source: OECD. For notes on methodology see Annex 3.

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Table C4.2. **Human capital growth in the total working-age population and in the employed population (1989-1996)**

Percentage point change in the proportion of individuals with tertiary qualifications[1] in the working-age population and in the employed population

	Reference period begins:	Working-age population[2]	Employed population[2]
Australia	1989	2.80	3.58
Austria	1989	1.76	1.58
Belgium	1989	7.07	7.36
Canada	1989	6.90	6.77
Denmark	1989	4.22	3.89
Finland	1989	3.56	5.72
France	1989	5.38	6.09
Germany	1992	0.38	2.30
Ireland	1989	7.79	7.74
Italy	1990	2.46	3.39
Netherlands	1990	3.35	2.99
New Zealand	1989	2.43	0.56
Norway	1989	4.00	3.52
Portugal	1989	4.44	6.92
Spain	1989	8.21	10.78
Sweden	1989	4.09	5.69
Switzerland	1991	1.63	1.91
United Kingdom	1989	6.40	7.47
United States	1989	4.14	3.91

1. Data were classified according to ISCED-76.
2. "Working age population" and "employed population" refer to individuals between 25 and 64 years of age.

Source: OECD *Economic Outlook*, June 2000.

Table C4.3. **Graduates by field of study (1999)**

Distribution of tertiary graduates in public and private institutions, by field of study and level of education

	Health and welfare		Life sciences, physical sciences and agriculture		Mathematics and computer science		Humanities, arts and education		Social sciences, business, law and services		Engineering, manufacturing and construction		Not known or unspecified	
	Tertiary-type B	Tertiary-type A and advanced research programmes	Tertiary-type B	Tertiary-type A and advanced research programmes	Tertiary-type B	Tertiary-type A and advanced research programmes	Tertiary-type B	Tertiary-type A and advanced research programmes	Tertiary-type B	Tertiary-type A and advanced research programmes	Tertiary-type B	Tertiary-type A and advanced research programmes	Tertiary-type B	Tertiary-type A and advanced research programmes
OECD countries														
Australia	m	15.6	m	8.1	m	4.4	m	27.2	m	36.8	m	7.9	m	a
Austria	m	9.4	m	10.2	m	3.3	m	22.9	m	36.8	m	16.9	m	0.4
Belgium (Fl.)[1]	28.0	14.0	0.4	11.7	3.0	2.3	28.3	25.8	27.2	31.5	13.1	14.7	n	n
Canada	19.4	7.9	3.5	9.4	5.3	3.9	12.7	28.4	41.1	39.8	17.1	8.2	0.8	2.4
Czech Republic	30.8	9.8	3.9	8.6	3.3	3.5	14.7	21.4	37.3	36.3	10.2	20.3	a	a
Denmark	42.7	m	1.4	m	3.5	m	17.7	m	20.9	m	13.7	m	n	m
Finland	35.7	16.9	1.8	7.5	3.0	3.2	4.0	22.9	42.2	25.7	13.4	23.8	a	n
France[1]	20.7	2.0	2.1	11.5	4.4	5.0	1.5	28.1	44.0	37.7	27.4	12.6	n	3.0
Germany	51.3	14.6	3.4	10.9	0.3	5.1	10.8	22.6	20.0	26.7	13.5	20.0	0.8	n
Greece	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Hungary	m	6.9	m	5.6	m	1.3	m	34.2	m	38.0	m	14.0	m	a
Iceland*	3.4	14.1	a	8.0	15.8	2.4	46.4	37.1	30.1	33.1	4.3	5.2	a	a
Ireland	8.7	8.3	10.6	8.9	10.5	10.2	7.6	32.9	41.2	31.0	21.3	8.1	n	0.5
Italy	a	15.5	a	7.0	a	4.0	100.0	20.5	a	37.0	a	15.9	a	a
Japan[1, 3]	16.6	4.9	0.6	7.9	n	x	23.8	24.5	15.3	37.5	16.4	21.4	27.4	3.7
Korea	7.9	6.6	1.2	10.2	1.5	4.5	22.1	26.7	24.5	25.1	42.8	27.1	a	a
Luxembourg	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Mexico	m	8.0	m	4.2	m	6.9	m	20.2	m	46.9	m	13.7	m	a
Netherlands	41.8	20.1	a	5.5	10.3	2.2	a	22.9	44.7	37.9	3.2	11.4	a	n
New Zealand	7.5	13.9	4.1	14.3	0.8	1.6	48.2	32.9	35.2	28.5	3.8	6.4	0.4	2.6
Norway*	1.1	27.4	0.1	4.5	13.6	3.0	6.2	27.1	64.8	25.0	13.5	8.1	0.7	5.0
Poland[2]	a	3.2	a	5.1	a	1.7	100.0	27.2	a	50.1	a	12.6	a	a
Portugal	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Slovak Republic	74.6	8.7	1.4	6.1	n	6.3	9.5	29.4	10.5	34.8	4.0	14.8	a	a
Spain	9.6	11.1	0.6	8.6	9.6	3.9	10.3	23.0	43.4	41.0	26.5	12.3	n	0.1
Sweden	10.3	23.8	2.1	5.6	9.5	3.1	12.7	26.5	30.8	22.0	32.7	18.9	1.8	n
Switzerland	13.2	12.8	1.3	9.3	5.4	6.2	16.5	21.1	49.0	34.6	14.6	15.7	n	0.3
Turkey	7.2	8.2	6.5	13.0	4.7	3.7	4.7	35.0	40.3	26.4	36.6	13.9	a	a
United Kingdom	39.5	12.2	5.7	9.8	8.4	5.9	15.1	30.3	21.3	29.5	10.0	12.2	n	a
United States	30.4	10.2	1.8	8.3	4.2	3.2	3.0	27.1	42.4	44.2	17.2	6.9	0.9	0.2
Country mean	**21.8**	**11.5**	**2.3**	**8.6**	**5.1**	**3.9**	**22.4**	**26.6**	**31.6**	**34.9**	**15.5**	**13.8**	**1.4**	**0.7**
WEI participant														
Israel	2.1	5.5	a	5.9	a	5.3	8.9	32.0	16.6	41.0	72.4	8.4	a	2.0

1. Tertiary-type B first degree programmes only.
2. Tertiary-type A first degree programmes only.
3. Tertiary-type A and advanced research programmes: mathematics and computing included in life sciences, physical sciences and agriculture.
* See Annex 3 for notes.

Source: OECD. For notes on definitions see Annex 3.

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Table C4.4. **Science graduates in the youth labour force (1999)**

Number of science graduates per 100 000 persons in the labour force 25 to 34 years of age, by gender

	Tertiary-type B			Tertiary-type A and advanced research programmes			All tertiary education		
	M + W	Men	Women	M + W	Men	Women	M + W	Men	Women
Australia	m	m	m	1 303	1 521	1 012	m	m	m
Austria	m	m	m	392	566	189	m	m	m
Canada	418	634	168	822	985	631	1 240	1 619	799
Czech Republic	127	158	82	544	689	334	671	847	416
Denmark	459	634	259	m	m	m	m	m	m
Finland	422	630	169	1 363	1 840	782	1 785	2 470	951
France	628	943	255	1 434	1 672	1 152	2 063	2 615	1 407
Germany	141	231	25	693	941	374	835	1 172	399
Hungary	n	n	n	775	977	475	775	977	475
Iceland	204	312	77	546	581	504	750	893	581
Ireland	1 448	1 828	981	1 340	1 494	1 151	2 789	3 322	2 132
Japan	566	785	224	1 048	1 530	297	1 614	2 315	521
Mexico	x	x	x	x	x	x	606	x	x
Netherlands	12	20	2	569	853	220	581	873	222
New Zealand	107	112	100	1 388	1 485	1 268	1 494	1 597	1 369
Norway	161	238	72	597	810	348	759	1 047	420
Poland	a	a	a	743	m	m	743	m	m
Spain	282	399	131	1 077	1 239	869	1 359	1 638	1 000
Sweden	127	177	70	902	1 204	559	1 029	1 381	629
Turkey	409	430	355	569	528	674	978	958	1 029
United Kingdom	266	364	140	1 353	1 659	958	1 620	2 024	1 098
United States	220	328	94	878	1 089	631	1 098	1 417	726
Country mean	**316**	**433**	**169**	**917**	**1 140**	**654**	**1 199**	**1 598**	**834**

Note: Science fields include life sciences; physical sciences, mathematics and statistics; computing; engineering and engineering trades, manufacturing and processing, architecture and building.

Source: OECD. See Annex 3 for notes.

Table C4.5. **Proportion of tertiary qualifications awarded to women (1999)**

In public and private institutions, by level of tertiary education and subject category

	All fields of study					Health and welfare		Life sciences, physical sciences and agriculture		Mathematics and computer science		Humanities, arts and education		Social sciences, business, law and services		Engineering, manufacturing and construction	
	Tertiary-type B (first degree)	Tertiary-type B (second degree)	First tertiary-type A degrees	Second tertiary-type A degrees	Advanced research programmes	Tertiary-type B	Tertiary-type A and advanced research programmes	Tertiary-type B	Tertiary-type A and advanced research programmes	Tertiary-type B	Tertiary-type A and advanced research programmes	Tertiary-type B	Tertiary-type A and advanced research programmes	Tertiary-type B	Tertiary-type A and advanced research programmes	Tertiary-type B	Tertiary-type A and advanced research programmes
OECD countries																	
Australia	m	m	58	52	40	m	75	m	50	m	27	m	71	m	51	m	21
Austria	m	m	48	31	34	m	57	m	45	m	16	m	65	m	50	m	15
Belgium (Fl.)	61	m	48	55	32	78	62	65	43	14	29	72	63	57	48	17	20
Canada	57	x	59	52	36	84	73	48	51	27	29	70	67	62	58	16	22
Czech Republic	66	a	49	51	31	86	62	45	41	24	18	61	71	68	52	24	22
Denmark	61	86	m	m	31	85	m	27	m	13	m	70	m	39	m	30	m
Finland	69	a	58	57	45	88	80	38	51	45	35	69	76	73	64	12	18
France	53	a	58	51	41	78	56	61	56	26	32	47	73	68	60	14	22
Germany	61	a	45	a	33	79	56	13	38	11	24	86	68	47	42	8	18
Greece	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Hungary	m	m	59	46	40	m	70	m	44	m	16	m	73	m	57	m	24
Iceland	50	a	66	66	n	92	77	a	50	22	19	60	84	50	52	a	39
Ireland	49	48	55	58	44	83	73	60	54	42	37	62	67	58	54	10	24
Italy	64	a	55	60	45	a	57	a	53	a	57	64	81	a	55	a	27
Japan	68	a	36	23	19	82	48	46	35	x	x	90	66	63	24	15	8
Korea	53	32	46	30	20	82	50	40	41	53	50	72	69	56	38	33	23
Luxembourg	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Mexico	m	m	51	m	37	m	m	m	m	m	m	m	m	m	m	m	m
Netherlands	57	a	52	70	30	83	74	a	35	10	19	a	70	47	47	a	13
New Zealand	66	66	63	53	42	83	79	40	47	48	31	74	72	58	53	35	31
Norway	46	a	64	53	36	87	81	25	45	32	12	63	76	54	48	9	25
Poland*	86	a	m	65	a	a	m	a	63	a	81	86	87	a	63	a	26
Portugal	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Slovak Republic	84	a	53	a	37	92	66	50	42	n	21	68	70	65	54	21	27
Spain	51	a	60	m	44	77	76	39	52	26	36	68	73	66	61	18	27
Sweden*	50	a	61	89	34	96	78	37	50	45	30	62	76	64	55	20	24
Switzerland	44	42	41	26	30	80	53	11	33	15	14	74	57	37	36	4	12
Turkey	44	a	42	37	38	66	56	47	43	28	40	70	46	56	39	24	25
United Kingdom	61	x	54	53	37	85	68	42	51	27	27	61	66	57	53	13	19
United States	61	a	56	55	42	85	75	37	48	45	32	75	68	66	52	14	19
Country mean	**59**	**55**	**53**	**52**	**36**	**83**	**67**	**41**	**46**	**28**	**31**	**69**	**70**	**58**	**51**	**18**	**22**
WEI participants																	
Brazil[1]	x	x	61	x	m	m	m	m	m	m	m	m	m	m	m	m	m
Chile[2]	48	a	52	43	26	m	m	m	m	m	m	m	m	m	m	m	m
China[2]	m	a	m	a	20	m	m	m	m	m	m	m	m	m	m	m	m
Indonesia[3]	28	x	43	x	38	m	m	m	m	m	m	m	m	m	m	m	m
Israel	m	a	61	55	44	80	67	a	54	x	33	79	80	72	55	28	22
Malaysia	45	x	57	x	36	m	m	m	m	m	m	m	m	m	m	m	m
Paraguay[2]	73	x	a	a	m	m	m	m	m	m	m	m	m	m	m	m	m
Philippines[2]	a	a	58	57	58	m	m	m	m	m	m	m	m	m	m	m	m
Sri Lanka[2]	m	m	50	n	46	m	m	m	m	m	m	m	m	m	m	m	m
Thailand	54	m	54	m	49	m	m	m	m	m	m	m	m	m	m	m	m
Tunisia	43	m	46	37	m	m	m	m	m	m	m	m	m	m	m	m	m
Uruguay[2]	74	81	57	75	m	m	m	m	m	m	m	m	m	m	m	m	m

1. Year of reference 1997.
2. Year of reference 1998.
3. Year of reference 2000.
* See Annex 3 for notes.

Source: OECD. See Annex 3 for notes on definitions.

C4

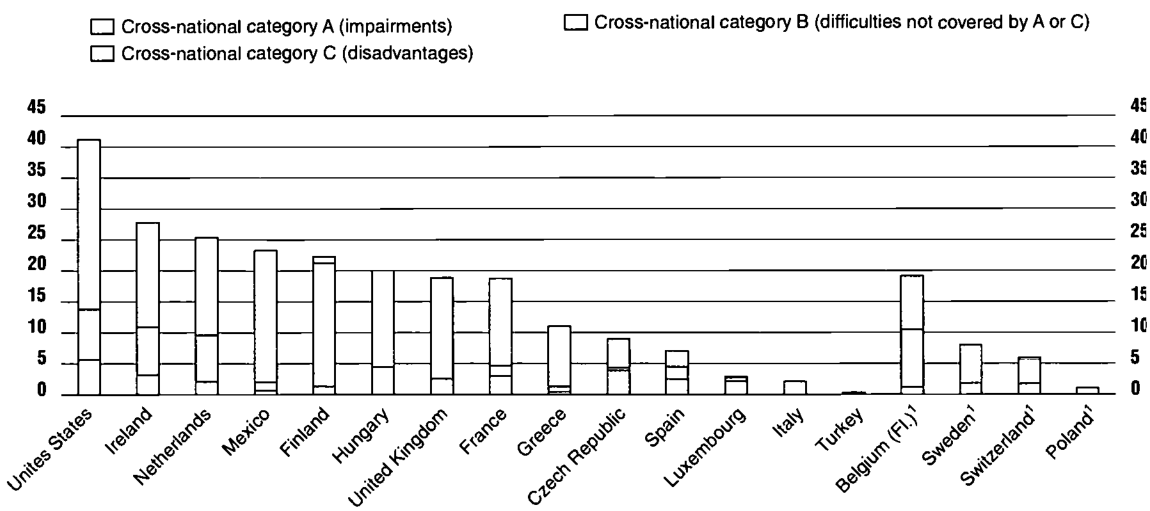
STUDENTS RECEIVING ADDITIONAL RESOURCES TO ACCESS THE CURRICULUM (DISABILITIES, LEARNING OR BEHAVIOUR DIFFICULTIES AND SOCIAL DISADVANTAGES)

- Different countries identify very different proportions of students as being in need of additional support. The proportion of students receiving additional resources ranges from 41 per cent to less than 1 per cent of all students in primary and lower secondary education.
- In some countries, students with disabilities (as included in cross-national category A) will be educated in segregated special schools, while in others these students will be in regular schools. Such differences reveal potential differences between countries in terms of educational provision, and can result in a variety of educational and socialising experiences for students.
- In almost all countries substantially more males than females are receiving additional resources.

C5

Chart C5.1. **Students receiving additional resources in primary and lower secondary education (1999)**

As a percentage of all students in primary and secondary education, by cross-national category, based on head counts



1. Cross-national category C not available or partially missing data.
Countries are ranked in descending order of the percentage of students receiving additional resources.
Source: OECD. Table C5.1.

POLICY CONTEXT

This indicator compares the proportions of students who are provided with additional resources in order to help them access the curriculum.

Students with disabilities, learning, behavioural or emotional difficulties and those from disadvantaged backgrounds often receive additional support in school to enable them to make satisfactory progress. Many continue to be educated in special schools, but increasingly they are included in mainstream education.

The orientation of educational policies towards lifelong learning and equity has particular significance for these students since they face the greatest risk of exclusion, not only from regular school classes but also from the labour market and involvement in society more generally. Monitoring the educational provision that is made for these students is of great importance, especially given the substantial extra resources which may be involved.

Many countries have positive policies towards equitable provision for students with special needs, in particular for the inclusion of those with disabilities into society. However, legislative frameworks, traditional attitudes, teacher training, segregated systems and categorical descriptions (such as disability categories), among other factors, may militate against inclusion and even favour exclusion. Gender issues, including the differential success of males and females in the regular education system, are of growing interest in many countries.

To deliver education for these students, most countries make additional resources available for schools. These usually take the form of extra teaching staff or assistants and other services, such as speech and language therapists and physiotherapists, and physical adaptations to buildings and equipment. Countries vary substantially with regard to the extent of development of these services and the location of service delivery (special schools, special classes in regular schools, regular classes in regular schools and other locations).

EVIDENCE AND EXPLANATIONS

Proportion of students considered to be receiving additional resources

The possibility of making international comparisons of the numbers and proportions of students who have difficulty in accessing the curriculum because of disability, learning or behavioural difficulties and disadvantages has previously been hindered by a lack of agreement on definitions. Approaches based on counting the numbers of students in special schools, or on models of handicap based on medical categories, do not reflect the reality in many countries of increasing inclusion of students with disabilities in mainstream education, and of an appreciation that such medical models are of limited value in planning educational provision to meet the needs of students.

A tri-partite international taxonomy classifies those receiving additional resources in an internationally consistent way.

This indicator takes a different approach, by using data based on the additional resources made available to support all students to access the curriculum. Student numbers are thus identified for the purposes of comparison in terms of the additional public and/or private resources allocated to ensure access. Nevertheless, it is important to remember that this approach is still being developed.

Category A corresponds broadly to needs arising from impairing conditions; Category B includes those experiencing difficulties in learning for no clear reason; and Category C covers students from disadvantaged backgrounds

To provide a basis for comparisons, countries have now located their own national categories used to identify students with disabilities, learning difficulties and disadvantages within a simple, tri-partite international taxonomy. Category A in this taxonomy corresponds broadly to needs arising from impairing conditions; Category B includes students experiencing learning or behaviour difficulties; and Category C covers students from disadvantaged backgrounds (see definitions below). The different frameworks that countries bring to bear in providing for these students were presented in indicator C6 in the last two editions of *Education at a Glance*. The analysis reveals that some countries include only students with medical disabilities, or Category A students, in their national categories (*e.g.*, the Czech Republic and Italy), while other countries, such as Spain and Turkey, include gifted and talented students. Others include those who are disadvantaged in various ways (*e.g.*, Switzerland).

The proportion of students receiving additional resources ranges from 41 per cent to less than 1 per cent of all students in primary and lower secondary education.

Different countries identify very different proportions of students in categories A, B, and C as being in need of additional support, even though some of the variation may be due to differences in the interpretation of categories. Chart C5.1 shows the substantial differences between countries in terms of the proportion of students identified as receiving additional resources to help them access the curriculum. The proportion of students receiving additional resources ranges from 41 per cent to less than 1 per cent of all students in primary and lower secondary education. Where possible, data are shown for cross-national categories A, B and C separately as proportions of all students in primary and lower secondary education. In countries with high proportions of students receiving additional resources, most of them are classified in cross-national category C. *Education at a Glance* 1998 (Table C6.5) provided a proxy of the extent of the additional resources provided through improved ratios of students to teaching staff. For category A students, ratios ranged from 2.3 to 8.6 for students in special schools and 1.7 to 10.7 in special classes in regular schools. These figures may be contrasted with ratios in regular classes ranging from 9.5 to 27.9. Thus is it clear that the additional resources provided may be substantial and act as a positive discrimination for students with the greatest difficulties.

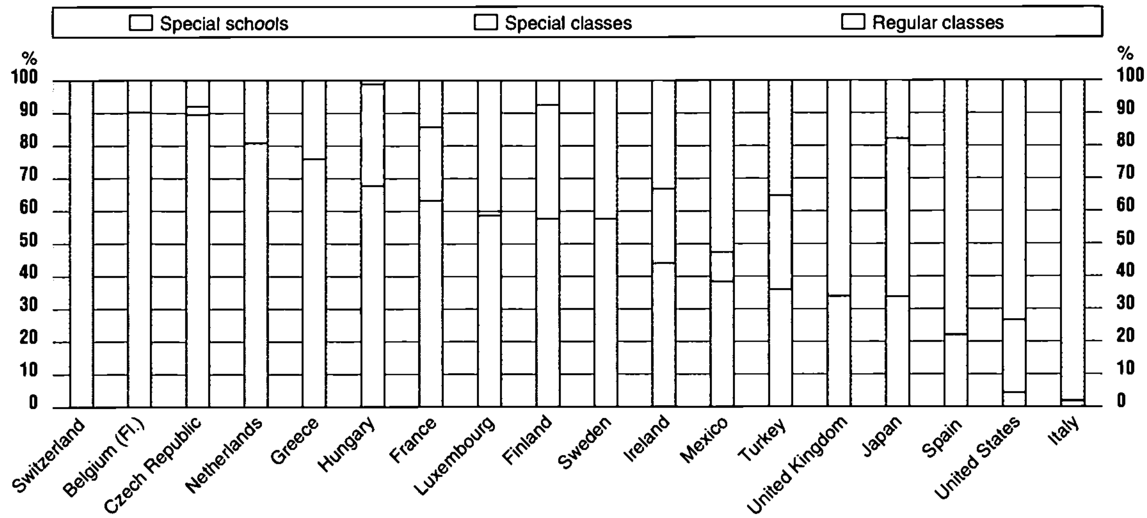
Location of students with disabilities, learning, behavioural or emotional difficulties, and disadvantages

There are striking differences between countries in terms of where disabled students in category A are educated, which may be in special schools, special classes or regular classes.

There is particular policy interest in the location of education of students with disabilities. Chart C5.2 shows where these students (classified as cross-national category A) are being educated, which may be in special schools, special classes or regular classes. The differences are particularly striking, with some countries having very few disabled students in special schools (*e.g.*, Italy and the United States) while some others have over 60 per cent in special schools (*e.g.*, Belgium (Flemish Community), Czech Republic, France, Greece, Hungary and the Netherlands). Debate continues over the desirability of including Category A students in regular schools, and this indicator responds to the need to monitor the changing situation.

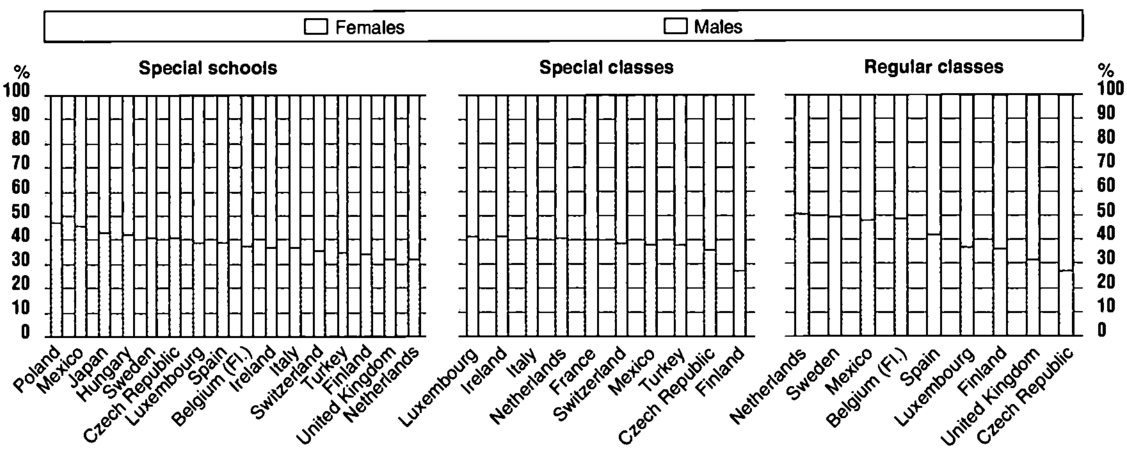
The distribution of students receiving additional resources by location differs by categories. Table C5.3 reveals the distribution of students by location, broken down by cross-national categories A, B and C.

Chart C5.2. **Distribution of students receiving additional resources to access the curriculum in cross-national category A, by location (1999)**



Countries are ranked in descending order of the proportion of students in special schools.
Source: OECD. Table C5.2.

Chart C5.3. **Gender distribution of students receiving additional resources in primary and lower secondary education, by location (1999)**



Countries are ranked in descending order of the proportion of female students.
Source: OECD. Table C5.4.

Gender differences

Chart C5.3 shows the proportions of male and female students who are receiving additional resources to help them access the curriculum in special schools, special classes and regular classes. Two points are especially noteworthy. First, in almost all countries where data are available, the proportion of males exceeds the proportion of females. In special schools and special classes, males comprise between 53 and 74 per cent of students, although there is more

In all countries where data are available, the proportion of males exceeds the proportion of females.

variability in regular classes. For example, in the Netherlands, the number of males and females in regular classes is almost equal, while in the Czech Republic, 73 per cent of students are male (Table C5.4).

DEFINITIONS AND METHODOLOGIES

Data are from an ongoing OECD survey on students receiving additional resources to access the curriculum, which was undertaken between 2000 and 2001

Students with disabilities, learning or behaviour difficulties and disadvantages are identified through the additional public and/or private resources provided to support their education. "Additional resources" are those made available over and above the resources generally available for students who have no difficulties in accessing the regular curriculum. Resources can be of many different kinds. Examples are: personnel resources (more favourable teacher student ratio, additional teachers), material resources (aids or supports (*e.g.*, hearing aid), adaptations to classrooms, specialised teaching materials), and financial resources.

Figures based on national categories covering students with disabilities, learning difficulties and disadvantages, as used by countries, have been aggregated into cross-national categories A, B and C.

- Category A refers to educational needs of students where there is substantial normative agreement – such as blind and partially sighted, deaf and partially hearing, severe and profound mental handicap and multiple handicaps.
- Category B refers to educational needs of students who have difficulties in learning which do not appear to be directly or primarily attributable to factors which would lead to categorisation as A or C.
- Category C refers to educational needs of students, which are considered to arise primarily from socio-economic, cultural and/or linguistic factors.

Special schools are defined as segregated settings, separately administered from regular or mainstream schools. Special classes are classes or units attached to regular schools.

The percentage of students in need of additional resources in Table C5.1 is calculated by dividing the number of such students by the total number of students in primary and lower secondary education (multiplied by 100). The figures for students in need of extra support are based on full-time study. Data refer to the school year 1998 to 1999. The figures are based on both public and private institutions.

Table C5.1. **Students receiving additional resources in primary and lower secondary education (1999)**

Number of students in cross-national categories A, B and C receiving additional resources as a percentage of all students in primary and lower secondary education and as a percentage of all students receiving additional resources

	As a percentage of all students in primary and lower secondary education				As a percentage of all students receiving additional resources		
	Total	Cross-national category			Cross-national category		
		A	B	C	A	B	C
Belgium (Fl.)*	19.1	1.2	9.3	8.7	6.1	48.6	45.4
Czech Republic	8.9	3.8	0.5	4.6	42.9	5.5	51.6
Finland	22.3	1.3	19.9	1.0	5.8	89.5	4.7
France*	18.7	2.9	1.7	14.1	15.7	9.1	75.2
Greece*	11.0	0.4	0.9	9.7	3.8	7.9	88.3
Hungary*	20.0	4.4	a	15.6	22.1	a	77.9
Ireland*	27.8	3.2	7.7	16.9	11.4	27.8	60.8
Italy*	2.1	2.1	a	a	100.0	a	a
Japan	m	1.2	m	0.2	m	m	m
Luxembourg*	2.9	2.1	0.5	0.2	73.4	18.3	8.3
Mexico*	23.3	0.7	1.3	21.3	2.9	5.8	91.3
Netherlands	25.4	2.1	7.5	15.8	8.1	29.7	62.2
Poland*	1.1	1.1	a	n	95.7	a	4.3
Spain	7.1	2.5	2.0	2.6	35.2	28.2	36.6
Sweden*	8.0	1.8	m	6.1	m	m	m
Switzerland*	5.9	1.7	3.9	0.3	29.0	65.4	5.5
Turkey*	0.3	0.3	n	a	99.3	0.7	a
United Kingdom*	18.8	2.5	16.3	a	13.4	86.6	a
United States*	41.2	5.6	8.2	27.5	13.6	19.8	66.6

* See Annex 3 for notes.
Source: OECD

Table C5.2. **Location of students receiving additional resources in primary and lower secondary education (1999)**

Number of students receiving additional resources as a percentage of all students in primary and lower secondary education, and percentage of students in cross-national category A, by location

	Students receiving additional resources as a percentage of all students in primary and lower secondary education			Distribution of students in cross-national category A, by location		
	Special schools	Special classes	Regular classes	Special schools	Special classes	Regular classes
Belgium (Fl.)*	4.8	0.2	14.2	90.3	a	9.7
Czech Republic	4.1	0.8	3.9	89.6	2.5	8.0
Finland	1.9	1.3	19.1	57.7	34.8	7.6
France*	1.9	2.4	14.4	63.3	22.4	14.3
Greece*	0.4	0.9	9.7	76.0	24.0	x
Hungary*	3.0	1.4	15.7	67.8	31.0	1.2
Ireland*	1.1	0.7	25.9	44.0	22.7	33.3
Italy*	n	n	2.1	1.7	0.2	98.1
Japan	0.4	0.6	0.2	33.8	48.3	17.9
Luxembourg*	1.3	0.4	1.2	58.7	1.3	40.1
Mexico*	1.1	0.2	22.1	38.5	8.9	52.6
Netherlands	5.5	3.5	16.4	80.8	a	19.2
Poland*	1.1	m	m	100.0	m	m
Spain*	0.5	x	6.5	22.1	x	77.9
Sweden*	1.1	m	6.9	57.6	a	42.4
Switzerland*	1.7	4.2	m	100.0	a	a
Turkey*	0.1	0.1	0.1	36.0	28.7	35.3
United Kingdom*	0.9	x	17.9	33.9	x	66.1
United States*	0.5	2.8	38.0	4.3	22.3	73.4

* See Annex 3 for notes.
Source: OECD

Table C5.3. **Distribution of students receiving additional resources to access the curriculum in each cross-national category, by location (1999)**

	Special schools			Special classes in regular schools			Regular classes in regular schools		
	Cross-national category			Cross-national category			Cross-national category		
	A	B	C	A	B	C	A	B	C
Belgium (Fl.)*	22.1	28.3	49.6	a	a	100.0	0.8	55.9	43.3
Czech Republic	82.8	11.9	5.3	11.2	a	88.8	7.7	a	92.3
Finland	38.8	61.2	n	35.2	64.8	n	0.5	94.0	5.5
France*	100.0	a	a	27.2	69.9	3.2	2.9	a	97.1
Greece*	79.6	20.4	n	11.3	88.7	a	x	n	100.0
Hungary*	100.0	a	n	100.0	a	n	0.3	a	99.7
Ireland*	87.5	6.9	5.6	99.0	1.0	a	4.1	29.9	66.0
Italy*	100.0	a	a	100.0	a	a	100.0	a	a
Japan	m	m	m	m	m	m	m	m	m
Luxembourg*	96.0	4.0	n	6.9	30.6	62.5	70.2	29.8	m
Mexico*	25.1	2.8	72.1	33.1	66.9	a	1.6	5.4	93.0
Netherlands	30.2	69.8	a	a	100.0	a	2.4	1.2	96.4
Poland*	95.7	a	4.3	m	m	m	m	m	m
Spain*	100.0	a	a	x	x	x	29.8	30.5	39.7
Sweden*	100.0	a	a	a	a	m	m	m	m
Switzerland*	100.0	n	n	n	92.2	7.8	n	m	m
Turkey*	99.5	0.5	a	100.0	n	a	98.4	1.6	a
United Kingdom*	91.9	8.1	a	x	x	a	9.3	90.7	a
United States*	47.9	52.1	a	45.6	54.4	a	10.9	16.8	72.3

* See Annex 3 for notes.
Source: OECD

Table C5.4. **Gender distribution of students receiving additional resources in primary and lower secondary education, by location (1999)**

	Special schools			Special classes			Regular classes	
	Males	Females		Males	Females		Males	Females
Belgium (Fl.)*	62.4	37.6	Czech Republic	64.1	35.9	Belgium (Fl.)	50.8	49.2
Czech Republic	59.3	40.7	Finland	72.8	27.2	Czech Republic	73.1	26.9
Finland	65.8	34.2	France*	60.1	39.9	Finland	64.0	36.0
France*	73.6	26.4	Ireland*	58.9	41.1	Luxembourg*	63.3	36.7
Greece	62.4	37.6	Italy	59.5	40.5	Mexico	52.2	47.8
Hungary*	57.6	42.4	Luxembourg*	58.8	41.2	Netherlands	50.4	49.6
Ireland	62.9	37.1	Mexico	61.9	38.1	Spain	58.2	41.8
Italy	63.4	36.6	Netherlands	59.1	40.9	Sweden*	50.7	49.3
Japan*	57.1	42.9	Switzerland	61.1	38.9	United Kingdom*	68.1	31.9
Luxembourg*	60.8	39.2	Turkey*	62.0	38.0			
Mexico	54.1	45.9						
Netherlands	68.3	31.7						
Poland*	52.7	47.3						
Spain*	61.1	38.9						
Sweden	58.7	41.3						
Switzerland	64.6	35.4						
Turkey*	65.1	34.9						
United Kingdom*	68.2	31.8						

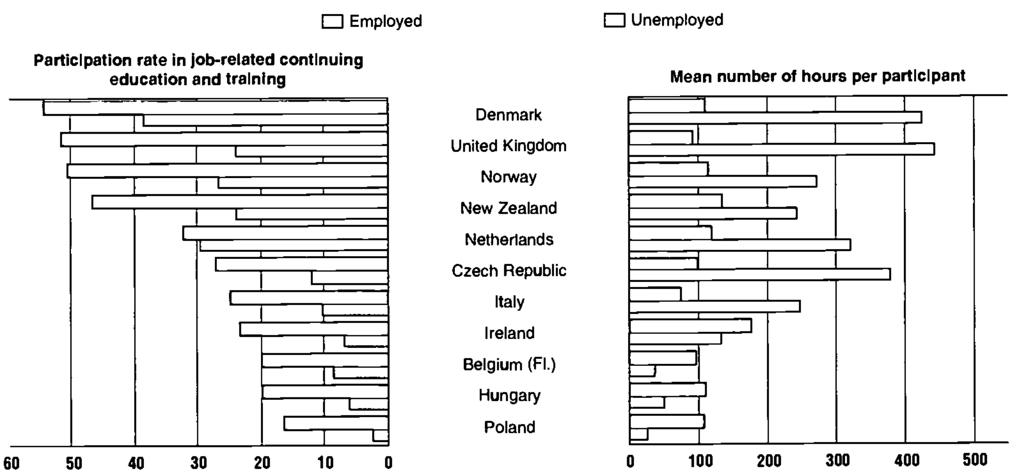
* See Annex 3 for notes.
Source: OECD.

PARTICIPATION IN CONTINUING EDUCATION AND TRAINING AMONG THE ADULT POPULATION

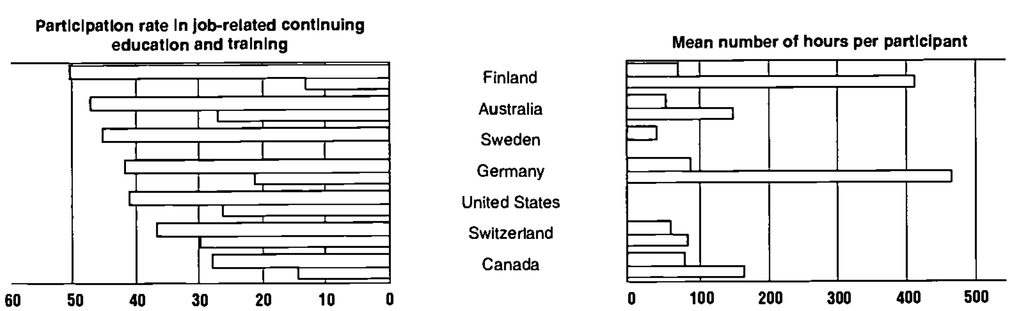
- Men and women participate in job-related training at fairly equal rates, although the total number of hours that women spend in training tends to be below those of men, mainly due to a higher incidence of part-time work and non-continuous employment.
- In all reporting countries, with one exception, at least one in five employees have participated in some job-related continuing education and training within a 12-month period.
- Adults with higher levels of educational attainment are also more likely to receive more training. On average, three times as many job-related training hours are invested in adults with a tertiary qualification compared with adults with less than an upper-secondary qualification.
- Unemployed people take less advantage of training in terms of participation, but often participate in programmes of long duration.

Chart C6.1. **Participation of the population 25 to 64 years of age in job-related continuing education and training**

Participation rate and mean number of hours per participant, by employment status



Countries are ranked in descending order of the participation rate of employed participants in job-related continuing education and training.
Source: IALS. Table 6.2a.



Countries are ranked in descending order of the participation rate of employed participants in job-related continuing education and training.
Source: National household surveys on adult education and training. Table C6.2a.

POLICY CONTEXT

Policies to promote lifelong learning are receiving increasing attention in OECD countries. Maintaining and upgrading the skills of the adult population has important implications for the provision of education and training activities following the completion of initial education.

As a skilled labour force is a prerequisite for success in today's economy, the education and training of current workers is likely to be the most effective means of maintaining and upgrading the skills of the current labour force. In the face of changing technologies, work methodologies and markets, policy-makers in many countries are encouraging enterprises to invest more in training, as well as promoting more general work-related training by adults.

While much is known about the efforts governments and individuals expend to promote learning within formal education institutions, far less is known about the extent of learning at the workplace or in other settings outside formal education and after the completion of initial education.

EVIDENCE AND EXPLANATIONS

What this indicator covers...

Previous editions of *Education at a Glance* have revealed patterns regarding the participation of adults in continuing education and training that are consistent between OECD countries. For example, younger workers spend, on average, more hours in training than older workers; employees in the service sector receive, on average, more training than employees in the manufacturing sector; and employees in large firms or in the public sector receive, on average, more training hours than employees in small firms.

This indicator seeks to enlarge this picture by relating data on the incidence and intensity of adult participation in continuing education and training, both job-related and otherwise, with the earlier educational experiences of individuals during initial education and with their employment status.

Continuing education and training activities covered by this indicator include courses, private lessons, correspondence courses, workshops, on-the-job training, apprenticeship training, arts, crafts, recreation courses and any other organised and sustained education.

... and what it does not cover.

Not covered by this indicator are informal learning activities, such as informal, "on the job" or other self-organised learning.

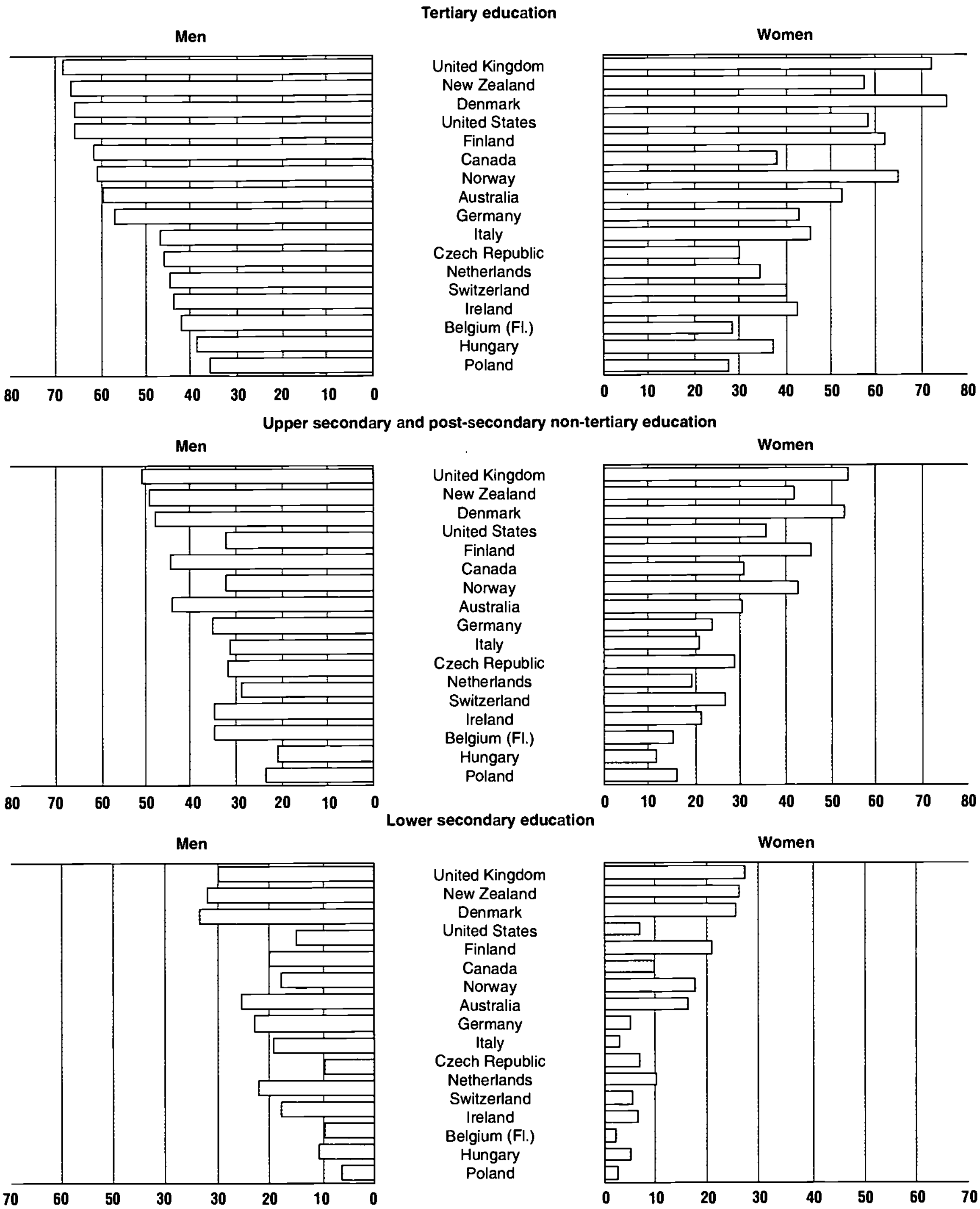
Participation rates by level of educational attainment

On average, adults with tertiary qualifications spent three times as many hours in job-related training than adults who have not completed upper secondary education...

Training tends to reinforce skill differences resulting from unequal participation in initial education. Participation rates in both job-related continuing education and training (Table C6.1*a*) and in all continuing education and training (Table C6.1*b*) rise with levels of educational attainment. Adults aged 25 to 64 years who have not attained upper secondary education participate, on average, in only 17 hours of job-related continuing education and training over the course of one year. In comparison, the figure is 43 hours for adults with an upper-secondary qualification, and over 72 hours for those with a tertiary qualification (Table C6.1*a*).

Chart C6.2. **Participation rate of the population 25 to 64 years of age in job-related continuing education and training**

By gender and level of education



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Data are ranked in descending order of the participation rate of the male population 25 to 64 years of age with tertiary qualifications in job-related continuing education and training.

Source: IALS except for Germany (National household survey on adult education and training). Table C6.1*a* and Annex 3 for IALS data for Australia, Canada, Finland, Switzerland and the United States.

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... thus education combines with other influences to make adult training least common among those who need it most.

The positive association between initial education and participation in continuing education and training remains strong even after controlling for other characteristics affecting participation in training. Workers tend to receive more training in countries with higher overall average levels of educational attainment, as well as in countries which devote a larger share of GDP to research and development or which achieve a strong trade performance in "high tech" industries. These patterns suggest that initial education and continuing education and training are mutually reinforcing, and that education combines with other factors to make adult training least common among those who need it most.

Women with lower educational levels tend to receive less job-related continuing education and training...

On average, only 19 per cent of women compared to 25 per cent of men with less than an upper secondary qualification have participated in some job-related continuing and training over the course of a year.

... but the pattern becomes less pronounced at higher levels of education.

At higher levels of education, gender differences in participation rates become less pronounced. For example, for 25 to 64-year-olds with upper secondary education, the participation rate of women in job-related continuing education and training, on average, is 37 per cent, while that of men is 40 per cent. At the tertiary level, the average participation rate of women is 47 per cent, while that of men is 48 per cent (Table C6.1*a*).

Participation and duration of job-related training activities

With one exception, in all reporting countries, at least one in five employees have participated in some job-related continuing education and training within a 12-month period.

With one exception, in all reporting countries, at least one in five employees have participated in some job-related continuing education and training within a 12-month period. However, the incidence and intensity of continuing education and training varies greatly between countries. Although it is difficult to make international comparisons, there is evidence that participation in formal continuing education and training is much higher in the Nordic countries compared with Southern or Eastern European countries. Participation rates in job-related continuing education and training by employees ranges from 24 per cent or below in Belgium (Flemish Community), Hungary, Ireland and Poland, to more than 50 per cent in Denmark, Finland, Norway and the United Kingdom.

The average duration of training for those who do participate in continuing education and training activities seems to be higher in countries with lower participation rates. Although the United Kingdom and the United States have above average participation rates, the duration of training for the employed tends to be quite low, except for training among the unemployed population. By contrast, low participation rates in Ireland and the Netherlands are balanced by a relatively high duration of participation (Chart C6.1 and Table C6.2*a*).

Unemployed people take less advantage of training in terms of participation, but for those who do participate, the duration of programmes tends to be longer.

Participation rates among the unemployed population, on average, are 50 per cent lower than corresponding rates among the employed population. In particular, very low participation rates were reported for the unemployed in job-related continuing education and training in Poland and Finland (Table C6.2*a*). By contrast, in Denmark, the Netherlands and Switzerland, the difference in participation rates between the employed and unemployed is not as pronounced.

While participation rates in continuing education and training are comparatively low among the unemployed, the mean number of hours of training of unemployed participants in job-related continuing education and training programmes is up to five times higher than that of employed participants. This is largely the result of active labour market policies that provide full-time programmes and training activities for the unemployed. However, there are exceptions to this pattern. For example, in Hungary, Ireland, Italy and Poland, a low participation rate is associated with a short duration of training (Table C6.2*a*).

DEFINITIONS AND METHODOLOGIES

Data are based on national surveys on continuing education and training of the adult population.

For this indicator, comparable data on continuing education and training were compiled from national surveys in seven countries. With the exception of Sweden, these national surveys have the same *reference period of* 12 *months*. In Sweden, a reference period of six months is used. The *sample sizes* in these surveys ranged from 5 000 to 40 000 respondents. The *data collection* was based on face-to-face interviews or telephone interviews. The coverage of *job-related continuing education and training* in these surveys extended to "all measures which the interviewed persons identify as job- or career-related", with the exception of the Swedish survey, which asks for measures paid for or sponsored by the employer. For this indicator, *informal types* of training have not been included, although some of the surveys (Australia, Germany, Sweden and Switzerland) also collect data on the participation in informal types of training. See Annex 3 for a list of sources on national household surveys on adult education and training.

Where such surveys were not available on a comparable basis, data from the International Adult Literacy Survey (IALS), which was carried out by the OECD and Statistics Canada between 1994 and 1998, were substituted.

Where comparable data could not be obtained from recent national surveys, data from the International Adult Literacy Survey, which was carried out by the OECD and Statistics Canada between 1994 and 1998, were substituted. The background questionnaire of the International Adult Literacy Survey records participation in education or training during the 12 months preceding the survey. The survey asks: "During the past 12 months, did you receive any training or education including courses, private lessons, correspondence courses, workshops, on-the-job training, apprenticeship training, arts, crafts, recreation courses or any other training or education?" This is a very broad definition of education and training, covering a wide category of training types. Subsequent questions seek to identify the type of education and training, financial sponsorship, the duration of training and the purpose of training in up to three education or training courses taken during the 12-month period. The latter question distinguishes between education or training taken for "career or job-related purposes" (shown in this indicators as "job-related training"); education or training undertaken for "personal interest"; and education and training undertaken for "other" reasons. In most countries, the achieved national samples in IALS amounted to between 2 000 and 4 500 respondents. These sample sizes are relatively small for nationally representative surveys, and this necessarily limits the analysis of sub-groups within the population without encountering cell sizes that are too small to allow population parameters to be inferred with confidence.

The *mean number of hours per participant* is equal to the *total number of training hours for participants*, divided by the *total number of participants*. In this indicator, participation rates and volume of training are calculated separately for *"all continuing education and training"* and for *"job-related continuing education and training"*.

Results published in *Education at a Glance* 1998 and this edition of *Education at a Glance* are comparable as far as they relate to *"all continuing education and training"*.

When considering participation rates and volume of training for *"job-related continuing education and training"*, results differ between the various editions of *Education at a Glance*. In both cases, the *number of training hours* is considered only if the reason for participating in that programme is job-related. In the 1998 edition of *Education at a Glance*, only the participants who specified a job-related purpose for at least one of the first three courses were taken into account. In this edition of *Education at a Glance*, the number of participants relates to all participants in a training programme, irrespective of the reason for participating in the programme. Hence, the indicator reflects the means number of job-related training hours for participants in all training activities.

The mean number of hours per adult is equal to the participation rate divided by 100, multiplied by the mean number of hours per participant.

Table C6.1*a*. **Participation and educational attainment in job-related continuing education and training**

Participation rate and mean number of hours per participant and per adult for the population 25 to 64 years of age, by level of education and gender

		Participation rate				Mean number of hours per participant[1]				Mean number of hours per adult[2]			
		Lower secondary	Upper secondary and post-secondary non-tertiary	Tertiary	All levels	Lower secondary	Upper secondary and post-secondary non-tertiary	Tertiary	All levels	Lower secondary	Upper secondary and post-secondary non-tertiary	Tertiary	All levels
Australia	M + W	36	42	64	43	63	61	64	63	22	26	41	27
1996/97	Men	37	42	63	43	58	66	67	66	21	28	42	28
	Women	35	43	65	44	66	49	61	59	23	21	40	26
Belgium (Fl.)	M + W	4	19	33	14	37	103	96	88	1	20	32	12
IALS 95/96	Men	6	24	36	18	54	126	103	109	3	30	37	20
	Women	2	15	28	10	23	81	83	68	1	12	23	7
Canada	M + W	8	19	33	22	95	91	94	92	8	17	31	20
1997	Men	10	20	33	22	77	92	101	95	7	19	33	21
	Women	6	18	34	22	125	89	87	89	8	16	29	19
Czech Republic	M + W	15	29	38	22	65	113	135	99	9	32	52	22
IALS 98/99	Men	22	29	44	27	52	121	111	86	12	35	49	23
	Women	7	29	30	17	104	106	177	119	7	30	53	20
Denmark	M + W	29	51	70	49	193	197	160	188	56	100	112	91
IALS 98/99	Men	33	48	66	48	130	167	124	150	43	80	81	72
	Women	25	53	76	49	255	224	201	224	64	119	152	110
Finland	M + W	21	35	58	37	80	92	106	97	17	32	62	36
1995	Men	22	34	55	35	56	101	105	93	12	34	58	33
	Women	19	36	61	39	115	84	107	100	22	30	65	39
Germany	M + W	10	28	45	30	213	138	109	130	21	38	49	40
1997	Men	19	32	47	36	200	142	107	129	38	45	50	46
	Women	5	24	43	25	239	135	113	132	12	32	49	33
Hungary	M + W	5	11	35	13	161	117	114	120	8	13	40	15
IALS 98/99	Men	5	11	32	12	217	110	132	127	12	12	42	16
	Women	5	11	37	13	117	124	102	114	6	14	38	15
Ireland	M + W	9	21	41	16	186	198	171	191	16	42	69	30
IALS 95/96	Men	11	21	39	16	214	183	160	191	23	38	62	31
	Women	6	21	43	15	157	208	181	191	10	44	77	29
Italy	M + W	6	27	46	16	44	118	103	97	3	32	47	16
IALS 98/99	Men	10	32	46	21	47	134	108	108	4	43	50	23
	Women	3	21	45	11	39	95	97	83	1	20	44	10
Netherlands	M + W	14	27	40	24	93	165	148	139	13	45	59	34
IALS 94/95	Men	18	35	44	30	122	207	146	166	22	73	64	51
	Women	10	19	34	17	68	115	151	108	7	22	52	19
New Zealand	M + W	29	45	62	38	167	158	258	177	48	71	161	68
IALS 95/96	Men	32	49	67	43	185	186	250	196	60	91	167	83
	Women	26	42	58	35	150	134	269	160	39	56	154	56
Norway	M + W	22	44	62	44	102	146	168	148	22	64	104	66
IALS 98/99	Men	25	44	59	45	110	144	126	137	28	64	75	61
	Women	17	43	65	44	90	148	208	161	16	63	135	71
Poland	M + W	5	18	27	11	99	97	117	102	5	17	31	11
IALS 94/95	Men	7	20	26	12	92	103	116	101	6	21	30	12
	Women	2	16	27	9	119	92	118	102	3	15	32	10
Switzerland	M + W	11	32	48	32	70	60	74	65	8	19	35	21
1998/99	Men	12	35	49	36	69	62	71	67	9	22	35	24
	Women	11	30	44	27	70	57	79	63	8	17	35	17
United Kingdom	M + W	28	52	70	40	79	143	142	114	22	74	99	45
IALS 95/96	Men	30	51	68	43	100	153	129	127	30	78	88	54
	Women	27	54	72	37	63	131	159	100	17	70	115	37
United States	M + W	15	31	47	35	m	m	m	m	m	m	m	m
1999	Men	15	33	47	36	m	m	m	m	m	m	m	m
	Women	15	30	47	34	m	m	m	m	m	m	m	m

1. The mean number of hours per participant is equal to the total number of training hours for participants divided by the total number of participants. See Annex 3 for notes on methodology.
2. The mean number of hours per adult is equal to the participation rate divided by 100, multiplied by the mean number of hours per participant. See Annex 3 for notes on methodology.

* See Annex 3 for notes.

Source: International Adult Literacy Survey 1994-1998 and national household surveys on adult education and training (see Annex 3 for details).

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Table C6.1b. Participation and educational attainment in all continuing education and training

Participation rate and mean number of hours per participant and per adult for the population 25 to 64 years of age, by level of education and gender

		Participation rate				Mean number of hours per participant[1]				Mean number of hours per adult[2]			
		Lower secondary	Upper secondary and post-secondary non-tertiary	Tertiary	All levels	Lower secondary	Upper secondary and post-secondary non-tertiary	Tertiary	All levels	Lower secondary	Upper secondary and post-secondary non-tertiary	Tertiary	All levels
Australia	M + W	23	39	60	36	152	161	179	167	35	63	107	60
IALS 95/96	Men	25	38	41	37	160	160	213	165	40	61	88	61
	Women	22	41	61	34	146	161	196	169	33	66	119	58
Belgium (Fl.)	M + W	9	28	47	22	110	141	127	126	9	40	60	27
IALS 95/96	Men	9	30	26	24	95	127	114	130	9	38	30	31
	Women	8	26	44	19	121	134	123	123	10	35	54	24
Canada	M + W	12	25	43	29	m	m	m	m	m	m	m	m
1997	Men	13	25	40	28	m	m	m	m	m	m	m	m
	Women	12	26	45	30	m	m	m	m	m	m	m	m
Czech Republic	M + W	18	36	49	27	115	150	133	135	21	54	65	37
IALS 98/99	Men	27	37	35	33	113	128	214	129	30	47	75	42
	Women	9	35	44	22	120	137	163	144	11	48	72	31
Denmark	M + W	36	59	75	56	216	181	131	206	79	107	98	116
IALS 98/99	Men	38	55	64	54	138	250	211	161	52	137	134	86
	Women	35	64	81	59	293	217	169	250	103	138	136	147
Finland	M + W	31	48	72	50	91	119	116	113	28	57	80	57
1995	Men	30	43	68	45	60	110	115	100	18	47	78	45
	Women	33	54	75	55	126	126	118	123	42	68	89	68
Germany	M + W	22	45	64	48	m	m	m	m	m	m	m	m
1997	Men	30	43	63	49	m	m	m	m	m	m	m	m
	Women	18	47	67	46	m	m	m	m	m	m	m	m
Hungary	M + W	6	17	49	18	164	141	151	156	10	23	74	28
IALS 98/99	Men	7	16	18	17	221	172	160	151	16	27	28	25
	Women	5	18	56	19	119	156	156	161	6	28	87	31
Ireland	M + W	13	30	50	22	238	198	176	230	30	60	87	51
IALS 95/96	Men	12	28	32	20	246	250	190	225	30	71	61	46
	Women	13	32	55	24	229	230	183	235	30	73	100	56
Italy	M + W	9	37	52	22	94	206	119	173	9	76	62	38
IALS 98/99	Men	13	41	33	26	62	242	159	154	8	98	52	41
	Women	7	33	53	18	142	221	137	200	9	72	73	36
Netherlands	M + W	24	42	52	36	138	225	197	182	33	95	103	66
IALS 94/95	Men	24	44	39	38	133	172	200	194	31	76	79	74
	Women	24	39	52	34	143	201	198	169	34	79	102	58
New Zealand	M + W	36	55	69	46	193	198	254	205	70	108	174	95
IALS 95/96	Men	38	54	55	48	195	180	280	212	73	98	154	101
	Women	35	55	67	45	190	188	265	198	66	103	177	89
Norway	M + W	26	47	67	48	118	171	152	180	31	81	102	87
IALS 98/99	Men	30	48	46	49	129	182	260	164	39	88	120	80
	Women	21	46	70	48	101	176	207	198	21	81	145	95
Poland	M + W	6	23	37	14	170	124	229	166	10	29	84	23
IALS 94/95	Men	8	25	22	15	156	140	241	159	13	36	52	24
	Women	4	22	39	13	213	133	235	176	8	29	92	23
Portugal*	M + W	8	39	55	13	m	m	m	m	m	m	m	m
IALS 98/99	Men	10	41	37	14	m	m	m	m	m	m	m	m
	Women	6	37	61	12	m	m	m	m	m	m	m	m
Sweden*	M + W	36	58	70	54	m	m	m	m	m	m	m	m
IALS 94/95	Men	39	56	61	53	m	m	m	m	m	m	m	m
	Women	34	61	74	56	m	m	m	m	m	m	m	m
Switzerland	M + W	20	44	55	42	m	m	m	m	m	m	m	m
1998/99	Men	16	41	55	42	m	m	m	m	m	m	m	m
	Women	22	47	55	42	m	m	m	m	m	m	m	m
United Kingdom	M + W	33	58	75	45	93	163	134	127	31	94	101	57
IALS 95/96	Men	33	54	64	46	109	152	171	135	36	82	108	62
	Women	33	64	80	44	81	158	149	118	27	100	120	52
United States	M + W	25	46	65	50	m	m	m	m	m	m	m	m
1999	Men	22	43	60	47	m	m	m	m	m	m	m	m
	Women	27	49	70	53	m	m	m	m	m	m	m	m

1. The mean number of hours per participant is equal to the total number of training hours for participants divided by the total number of participants. See Annex 3 for notes on methodology.
2. The mean number of hours per adult is equal to the participation rate divided by 100, multiplied by the mean number of hours per participant. See Annex 3 for notes on methodology.

* See Annex 3 for notes.

Source: International Adult Literacy Survey 1994-1998 and national household surveys on adult education and training (see Annex 3 for details).

Table C6.2*a*. **Participation and employment status in job-related continuing education and training**

Participation rate and mean number of hours per participant and per adult for the population 25 to 64 years of age, by employment status and gender

		Participation rate			Mean number of hours per participant[1]			Mean number of hours per adult[2]		
		Employed	Unemployed	All	Employed	Unemployed	All	Employed	Unemployed	All
Australia	M + W	47	27	43	56	155	63	27	42	27
1996/97	Men	46	24	43	60	159	66	28	38	28
	Women	50	32	44	51	151	59	25	48	26
Belgium (Fl.)	M + W	20	9	14	97	37	88	19	3	12
IALS 95/96	Men	21	7	18	109	92	109	23	6	20
	Women	18	9	10	81	323	68	14	31	7
Canada	M + W	28	15	22	83	170	92	23	25	20
1997	Men	26	13	22	85	214	95	22	28	21
	Women	30	16	22	80	126	89	24	21	19
Czech Republic	M + W	27	12	22	101	380	99	27	46	22
IALS 98/99	Men	31	10	27	87	75	86	27	7	23
	Women	23	14	17	123	164	119	28	22	20
Denmark	M + W	55	39	49	111	426	188	61	165	91
IALS 98/99	Men	52	43	48	98	225	150	51	97	72
	Women	58	37	49	125	118	224	72	43	110
Finland	M + W	51	13	37	76	419	97	38	56	36
1995	Men	46	12	35	75	378	93	38	45	33
	Women	56	15	39	76	453	100	35	68	39
Germany	M + W	42	21	30	92	471	130	42	101	40
1997	Men	43	21	36	94	526	129	41	111	46
	Women	40	22	25	89	424	132	35	91	33
Hungary	M + W	20	6	13	111	50	120	22	3	15
IALS 98/99	Men	17	7	12	115	57	127	20	4	16
	Women	23	4	13	109	365	114	25	14	15
Ireland	M + W	24	7	16	177	133	191	42	9	30
IALS 95/96	Men	21	5	16	165	152	191	34	7	31
	Women	29	17	15	192	285	191	55	50	29
Italy	M + W	25	10	16	76	248	97	19	26	16
IALS 98/99	Men	25	12	21	83	629	108	21	75	23
	Women	25	9	11	66	332	83	16	29	10
Netherlands	M + W	33	30	24	120	321	139	39	95	34
IALS 94/95	Men	35	28	30	120	128	166	41	37	51
	Women	29	32	17	120	205	108	35	67	19
New Zealand	M + W	47	24	38	136	243	177	64	59	68
IALS 95/96	Men	46	33	43	154	260	196	71	86	83
	Women	47	13	35	116	112	160	55	15	56
Norway	M + W	51	27	44	116	273	148	59	73	66
IALS 98/99	Men	49	21	45	114	147	137	55	31	61
	Women	54	33	44	118	281	161	63	92	71
Poland	M + W	17	2	11	110	26	102	18	1	11
IALS 94/95	Men	16	4	12	104	111	101	17	4	12
	Women	17	1	9	117	303	102	19	3	10
Sweden[3,*]	M + W	45	m	m	44	m	m	42	m	m
2nd half 1999	Men	43	m	m	47	m	m	41	m	m
	Women	48	m	m	41	m	m	44	m	m
Switzerland	M + W	37	30	32	64	89	65	24	27	21
1998/99	Men	39	29	36	65	96	67	25	28	24
	Women	35	30	27	63	82	63	22	25	17
United Kingdom	M + W	52	24	40	92	445	114	48	107	45
IALS 95/96	Men	51	28	43	105	20	127	53	6	54
	Women	53	19	37	78	118	100	42	23	37
United States	M + W	41	27	35	m	m	m	m	m	m
1999	Men	40	16	36	m	m	m	m	m	m
	Women	42	36	34	m	m	m	m	m	m

1. The mean number of hours per participant is equal to the total number of training hours for participants divided by the total number of participants. See Annex 3 for notes on methodology.
2. The mean number of hours per adult is equal to the participation rate divided by 100, multiplied by the mean number of hours per participant. See Annex 3 for notes on methodology.
3. Data on the mean number of hours per adult refer to the the whole reference year 1999.

* See Annex 3 for notes.

Source: International Adult Literacy Survey 1994-1998 and national household surveys on adult education and training (see Annex 3 for details).

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Table C6.2b. **Participation and employment status in all continuing education and training**

Participation rate and mean number of hours per participant and per adult for the population 25 to 64 years of age, by employment status and gender

		Participation rate			Mean number of hours per participant[1]			Mean number of hours per adult[2]		
		Employed	Unemployed	All	Employed	Unemployed	All	Employed	Unemployed	All
Australia	M + W	42	28	36	151	306	167	64	87	60
IALS 95/96	Men	40	28	37	147	301	165	59	85	61
	Women	45	28	34	155	316	169	69	89	58
Belgium (Fl.)	M + W	27	17	22	125	221	126	34	37	27
IALS 95/96	Men	27	7	24	129	325	130	35	22	31
	Women	26	22	19	118	202	123	31	44	24
Canada	M + W	42	30	36	124	354	205	52	106	75
IALS 94/95	Men	41	26	37	121	405	193	49	104	71
	Women	43	35	36	126	312	216	55	109	78
Czech Republic	M + W	34	14	27	133	235	135	45	34	37
IALS 98/99	Men	38	14	33	127	434	129	48	59	42
	Women	29	15	22	143	130	144	41	20	31
Denmark	M + W	61	51	56	123	397	206	75	202	116
IALS 98/99	Men	57	50	54	107	397	161	61	198	86
	Women	65	52	59	140	396	250	92	205	147
Finland	M + W	70	29	58	125	422	185	87	124	107
IALS 98/99	Men	66	23	54	115	339	162	76	79	88
	Women	75	36	62	134	480	205	100	172	127
Hungary	M + W	28	10	18	142	320	156	39	30	28
IALS 98/99	Men	23	11	17	138	187	151	31	21	25
	Women	33	7	19	145	667	161	48	46	31
Ireland	M + W	29	9	22	195	389	230	58	33	51
IALS 95/96	Men	25	6	20	175	303	225	44	20	46
	Women	37	17	24	220	552	235	82	96	56
Italy	M + W	29	17	22	99	392	173	29	65	38
IALS 98/99	Men	29	17	26	104	269	154	30	45	41
	Women	31	16	18	90	532	200	28	88	36
Netherlands	M + W	43	39	36	147	494	182	63	194	66
IALS 94/95	Men	43	33	38	144	641	194	62	212	74
	Women	43	53	34	152	287	169	66	153	58
New Zealand	M + W	53	31	46	151	435	205	80	136	95
IALS 95/96	Men	51	39	48	168	339	212	86	133	101
	Women	55	22	45	132	650	198	73	140	89
Norway	M + W	54	33	48	132	419	180	71	139	87
IALS 98/99	Men	52	32	49	123	394	164	64	128	80
	Women	57	34	48	142	445	198	80	152	95
Poland	M + W	21	8	14	164	207	166	34	16	23
IALS 94/95	Men	20	9	15	151	235	159	30	21	24
	Women	22	7	13	182	178	176	39	12	23
Portugal*	M + W	17	10	13	m	m	m	m	m	m
IALS 98/99	Men	15	6	14	m	m	m	m	m	m
	Women	19	12	12	m	m	m	m	m	m
Sweden*	M + W	60	46	54	m	m	m	m	m	m
IALS 94/95	Men	57	50	53	m	m	m	m	m	m
	Women	64	41	56	m	m	m	m	m	m
Switzerland	M + W	46	32	42	104	433	123	48	140	51
IALS	Men	45	24	44	115	259	132	51	61	57
	Women	47	41	40	92	534	114	43	217	45
United Kingdom	M + W	56	33	45	100	265	127	56	88	57
IALS 95/96	Men	54	33	46	108	283	135	58	94	62
	Women	59	33	44	91	245	118	54	80	52
United States	M + W	49	30	42	100	130	115	49	39	48
IALS 94/95	Men	47	13	42	120	112	123	57	15	51
	Women	51	47	42	81	135	108	41	64	45

1. The mean number of hours per participant is equal to the total number of training hours for participants divided by the total number of participants. See Annex 3 for notes on methodology.
2. The mean number of hours per adult is equal to the participation rate divided by 100, multiplied by the mean number of hours per participant. See Annex 3 for notes on methodology.

* See Annex 3 for notes.

Source: International Adult Literacy Survey 1994-1998 and national household surveys on adult education and training (see Annex 3 for details).

THE LEARNING ENVIRONMENT AND ORGANISATION OF SCHOOLS

D

While the financial resources invested in education and the results of education in terms of student achievement and labour market outcomes are discussed in other chapters, this chapter presents indicators on teachers, on teaching and instruction time, and on information technology in schools. These go some way to explaining some of the major factors affecting how educational expenditure translates into educational outcomes. Indicators D1, D2, and D3 reflect on the demographics and the labour market situation of teachers and Indicator D6 looks at teachers' opportunities to acquire information technology skills, which are a new and urgent requirement in the current economic and social environment.

The amount of knowledge and skills learned at school depends greatly on the extent to which students have access both to teachers with specific knowledge and teaching skills, and to learning opportunities provided by new media such as the Internet. Three indicators report on students' opportunities to learn: Indicator D4 looks at the time allocated to the teaching of different subjects to students aged 12 to 14 years, Indicator D5 reports on the ratio of students to teaching staff as a measure of access to teachers' time, and Indicator D7 looks at access to new technology in schools.

The recruitment and retention of an educated and skilled teaching force is a major concern in OECD countries. Starting salaries and the structures of salary scales affect the types of people that countries are able to attract into the teaching profession, as well as the career decisions of teachers. The need for both competitive starting salaries and a reward system acknowledging new skills, the value of experience and actual performance, poses a challenge for every OECD country. A comparison of different national salary schemes provides a unique opportunity for policy-makers to evaluate their own current policies and possible alternatives. **Indicator D1** examines the level of starting, mid-career and maximum statutory salaries of teachers in public primary and secondary education. The salaries are presented in equivalent US dollars adjusted for cross-national differences in purchasing power, relative to GDP per capita, and to the salaries of other workers in the public sector. This makes it possible to consider both the absolute volume of resources invested in teachers and the level of investment in teachers relative to a country's ability to pay. Besides basic salary scales, most countries use a complex system of bonuses to attract able people and to reward qualifications and performance in teaching. These are reflected in the indicator as well.

The demographics of teachers have a substantial impact both on the renewal of the teaching force and on the financing of education. Many OECD countries face the problem of an ageing teaching force, and a growing demand for secondary and post-secondary education at the same time. **Indicator D2** compares age distribution patterns in different OECD countries and gives indications of foreseeable shortages of teachers.

Teachers' working time is an issue of major importance for both the financing of education and the attractiveness of the teaching profession. Even in countries with comparatively low salary levels, long vacations, flexible working time arrangements, and the relative freedom of teachers to define their working hours are advantages that attract many (particularly women) to the education sector. While part of **Indicator D2** looks at gender distribution in the teaching profession, **Indicator D3** examines the statutory working time of teachers at different levels of education, as well as the statutory teaching time, *i.e.*, the time that full-time teachers are expected to spend teaching students. Although working time and teaching time only partly determine the actual workload of teachers, they do give some insight into differences between countries in what is demanded of teachers.

While Indicator D3 compares the time that teachers are expected to spend at school, **Indicator D4** examines teaching time as a specific learning resource from the students' point of view, and as a gross measure of learning opportunity. Instruction time, *i.e.* the time which students are expected to spend being taught, is the main resource invested in the educational process and is generally assumed to have a major impact on learning achievement. Intended instruction time (in hours per year) reported in Indicator D4 is based on national curriculum documents for 12 to 14-year-olds. An examination of the time allocated to particular subjects or study areas also reveals similarities and differences between countries in the focus of teaching.

While the intended instruction time shown in Indicator D4 measures the time for which a student has access to teaching in various study areas, **Indicator D5** provides a measure of students' access to teachers (in full-time equivalents). Although a low ratio of students to teaching staff does not necessarily mean better access to teaching and to educational support and may simply be a symptom of ineffective use of human resources, a very high ratio of students to teaching staff certainly suggests insufficient professional support for learning, particularly for students from disadvantaged home backgrounds. At the same time, such inferences need to be made with great care since many other factors are at work, and some of the countries with the highest ratio of students to teaching staff actually display the highest levels of educational outcomes (see Indicator F1).

Recognising that their economies are increasingly dependent on technological knowledge and skills, OECD countries have been making efforts to introduce computer technology in the school system in order to keep up with the pace of development of new technology in other economic sectors. Nevertheless, it takes time for the school system to adapt, not only because schools have to be equipped with computer technology but, more importantly, because schools have to accumulate the necessary knowledge and skills to use it effectively. **Indicator D6** focuses on the availability of in-service teacher training in the use and management of IT.

Students with little or no exposure to information technology in school may face difficulties in making a smooth transition to the modern labour market. While the issue of how computers should be used by students and teachers so as to maximise students' learning is a matter of debate, measures of students' access to information technology can be an indicator of how well schools are responding to technological change. **Indicator D7** compares the number of students per computer in various countries, students' access to e-mail and the Internet, and the various ways in which students are helped to make use of information technology.

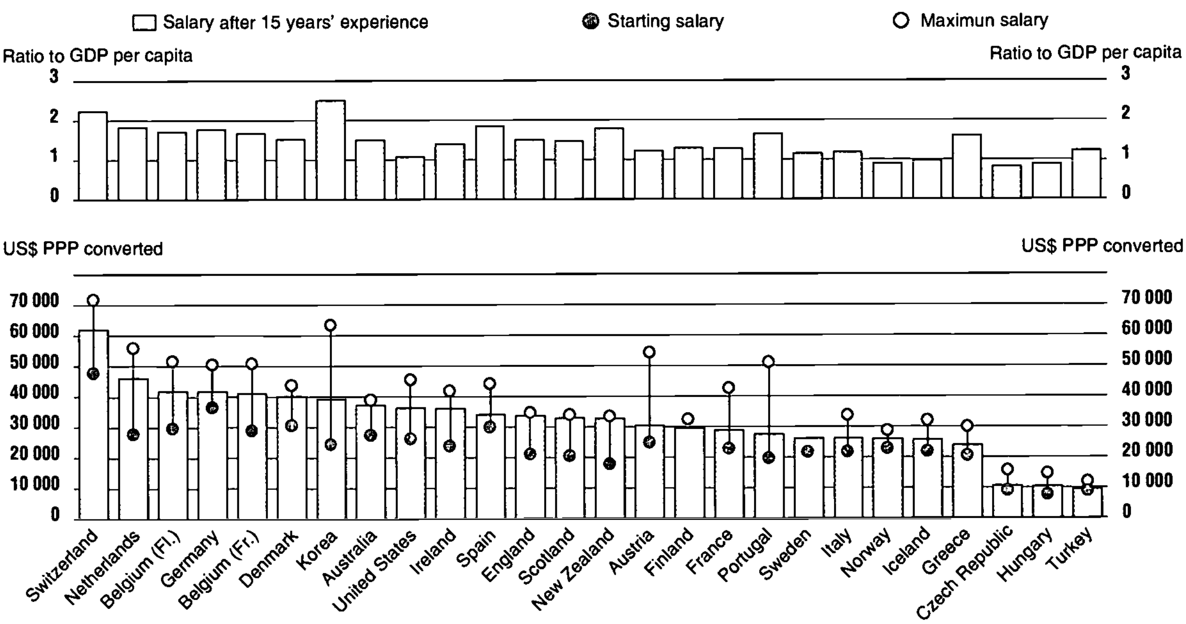
Annex 3 is a source of qualitative information on differences and similarities between countries in teachers' pay scales and bonus systems, teaching and working time definitions, and curricula. It also acts as an aid to interpreting comparisons and data on individual countries.

SALARIES OF TEACHERS IN PUBLIC PRIMARY AND SECONDARY SCHOOLS

- Statutory salaries for lower secondary teachers with 15 years' experience in Germany, Korea and Switzerland are more than four times those in the Czech Republic, Hungary and Turkey.
- In OECD countries, the salaries of teachers with 15 years' teaching experience who work in primary and lower secondary education are between 10 and 95 per cent higher than starting salaries.
- Severall countries award permanent or temporary salary enhancemens to teachers for outstanding performance in teaching.
- The average statutory salary per teaching hour after 15 years' experience is US$34 in primary education, US$41 in lower secondary and US$50 in upper secondary general education.
- Most countries provide permanent bonuses to all teachers for higher than minimum educational qualifications, additional management responsibilities and for teaching students with special educational needs. Temporary adjustments are usually awarded to teachers who work overtime, who have additional management duties, or who are involved in special tasks.
- Increases in teachers' salaries have lagged behind growth in GDP per capita between 1994 and 1999 in all but two countries.

Chart D1.1. **Teachers' salaries in upper secondary general education (1999)**

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



Countries are ranked in descending order of salary after 15 years' experience.
Source: OECD. Table D1.1c.

POLICY CONTEXT

This indicator shows the starting, mid-career and maximum statutory salaries of teachers in public primary and secondary education, and incentive schemes and bonuses used in teachers' pay scales.

Ensuring that there will be enough skilled teachers to educate all children is an important policy concern in all OECD countries. Key determinants of the supply of qualified teachers are the salaries and working conditions of teachers, including starting and salaries and pay scales, and the costs incurred by individuals in becoming teachers, as compared with salaries and costs in other occupations. Both affect the career decisions of potential teachers and the types of people attracted to the teaching profession.

At the same time, teachers' salaries are the largest single factor in the cost of providing education (see indicator B5). The compensation of teachers is thus 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 a number of interrelated factors, including teachers' salaries, the ratio of students to teaching staff (indicator D5), the quantity of instruction time planned for students (indicator D4), and the designated number of teaching hours (indicator D3).

EVIDENCE AND EXPLANATIONS

Comparing teachers' salaries

Teachers' salaries are compared in absolute terms, relative to GDP per capita, and with salaries of other public sector professions.

The first part of this indicator examines the starting, mid-career and maximum statutory salaries of teachers with the minimum level of qualifications required for certification as teachers 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 and qualifications on national salary scales, and also on the cost of teaching time in different countries. Second, teachers' salaries are compared relative to GDP per capita. This is a rough measure of investment in teaching relative to a country's ability to finance educational expenditure. Third, teachers' salaries are compared with salaries of other public sector professions in order to gauge the competitiveness of teachers' salaries.

Statutory salaries for lower secondary teachers with 15 years' experience in Germany, Korea and Switzerland are more than four times those in the Czech Republic and Hungary.

In OECD countries, annual statutory salaries of public lower secondary teachers with 15 years' experience range from below US$10 000 in the Czech Republic and Hungary to over US$50 000 in Switzerland (Table D1.1*b*). This difference, which appears even after an adjustment for purchasing power parities has been made, has a large impact on the variation in education costs per student (see indicator D5). With increasing levels of education, statutory mid-career salaries tend to increase as well, from an average of US$27 500 at the primary level through US$28 600 at the lower secondary level to US$31 900 at the upper secondary level. At the same time, the extent to which countries pay teachers more at higher levels of education varies greatly. While in England, Norway, New Zealand, Portugal and Scotland, mid-career statutory salaries at the upper secondary level are comparable to salaries at the primary level, in the Netherlands and Switzerland upper secondary salaries are 1.5 and 1.4 times higher than at the primary level (Tables D1.1*a*, *c*).

Statutory salaries, as reported in this indicator, refer to scheduled salaries according to official pay scales. These figures should be distinguished from the actual wage bills incurred by governments (see indicator B5) and the average salaries of teachers. Furthermore, since teaching time and teachers' workload can vary considerably between countries, these factors should be taken into account when statutory salaries for teachers are compared between countries.

Length of teaching experience and qualifications are two factors that 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' experience, and at the top of the salary scale, provides information on the extent to which teaching experience influences salary scales within countries (Tables D1.1*a-d*). Teachers in Hungary and Portugal, for example, have starting salaries that are below the OECD average but increase by over 43 per cent after 15 years' experience. In countries such as Australia, Denmark, England, New Zealand and Scotland, where it takes between seven and 11 years for upper secondary teachers to attain top salary, there is little or no difference between salaries after 15 years' experience and top-of-the-scale salaries.

The average statutory salary per teaching hour after 15 years' experience is **US$34** *in primary education,* **US$41** *in lower secondary and* **US$50** *in upper secondary general education.*

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 D3). Although this measure does not adjust salaries for the amount of time that teachers spend in all teaching-related activities, it can nonetheless provide a rough estimate of the cost of an hour of teaching across countries. The average statutory salary per teaching hour after 15 years' experience is US$34 in primary education, US$41 in lower secondary and US$50 in upper secondary general education (Chart D1.2). In primary education, the Czech Republic, Hungary and Turkey have relatively low salary costs per teaching hour (US$12, US$14 and US$14, respectively); by contrast, costs are relatively high in Denmark (US$51), Germany (US$46), Korea (US$60) and Switzerland (US$49). There is more variation in salary cost per teaching hour in general upper secondary schools, ranging from US$16 in the Czech Republic to US$92 in Switzerland. The cost of an hour of teaching time at the upper secondary general level in Denmark, Korea and Switzerland is more than four times the amount in the Czech Republic, Hungary and Turkey (Chart D1.2).

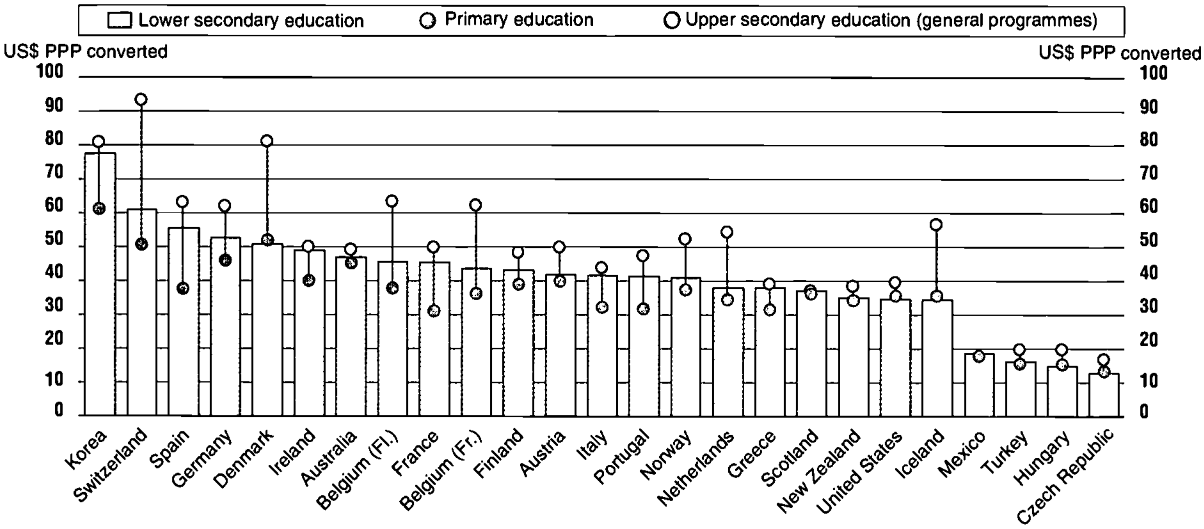
Comparing statutory salaries relative to **GDP** *per capita indicates the extent to which a country invests in teaching resources.*

In order to measure the extent to which a country invests in teaching resources, relative to its ability to fund educational expenditure, it is useful to compare statutory salaries relative to GDP per capita. High salaries relative to GDP per capita suggest that a country is making more of an effort to invest its financial resources in teachers.

Mid-career salaries of primary and lower secondary teachers relative to GDP per capita were lower in 1999 than in 1994 in all OECD countries except Greece and New Zealand. This may indicate that teachers' salaries, like salaries in many other professions, grew more slowly than GDP per capita in most countries over this period. At the lower secondary level, the OECD average for mid-career salaries relative to GDP per capita was 1.36 in 1999, compared with 1.50 in 1994. In Ireland, the mid-career salary of a primary teacher relative to GDP per capita was 2.11 in 1994, but this value decreased to 1.38 in 1999 (Table D1.1*a*, *b*).

Chart D1.2. **Salary per teaching hour (1999)**

Salary after 15 years' experience per teaching hour, by level of education, in equivalent US dollars converted using PPPs



Countries are ranked in descending order of salary after 15 years' experience per teaching hour at the lower secondary level.
Source: OECD. Tables D1.1 *a-c*.

Mid-career salaries for primary teachers relative to GDP per capita are low in some countries and high in others.

Mid-career salaries for primary teachers relative to GDP per capita are lowest in the Czech Republic (0.69) and Hungary (0.72) and highest in Korea (2.51) and New Zealand (1.78). While the mid-career salary of a primary teacher in Spain is around the OECD average, its ratio to GDP per capita is relatively high compared with other OECD countries. In secondary education, mid-career salaries relative to GDP are highest in Korea and Switzerland (Table D1.1*b-d*).

The relationship between teachers' salaries and per capita wealth is not straightforward.

Although some countries, such as the Czech Republic and Hungary, have both relatively low GDP per capita and low teachers' salaries, there are countries where GDP per capita is relatively low and yet teachers' salaries are comparable to those in countries with much higher GDP (Greece, Korea and Portugal). On the other hand, some countries with relatively high GDP per capita have teachers' salaries below the OECD average (Iceland and Norway), whereas others have a high GDP per capita and high teachers' salaries (Switzerland and the United States) (Chart D1.1).

Primary teachers' salaries tend to be lower than those in other public sector professions.

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. The International Standard Classification of Occupations (ISCO-88) identifies 10 occupational groups, each of which is defined by a set of tasks and duties. According to ISCO-88, for example, the tasks of a primary teacher would usually include preparing a programme of learning, giving instruction in a range of subjects at the primary education level, organising certain educational activities and preparing reports. 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 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.

In most countries, primary teachers' salaries are significantly lower than those in the other selected professions, especially in countries such as Canada, Denmark, France, Iceland and Italy, and are most comparable to the salaries of nurses or kindergarten teachers. In 13 countries, the salary of a primary school teacher is at least 10 per cent lower than that of a civil engineer, qualified executive official, sanitary engineer, mathematics teacher, head teacher or public health physician. In Canada, a primary teacher's salary is lower than that of a draughtsman, engineer or social worker (Table D1.2).

While it can be said that in many countries the salary of a primary teacher does not compare well with that available in other public sector professions with a similar level of tasks and skills, in Greece, Mexico and Portugal the salary of a primary school teacher is at least 10 per cent higher than that in most other selected professions (Table D1.2).

Teachers' salary scales

In OECD countries, salaries of teachers in primary and lower secondary education with 15 years' teaching experience are between 10 and 95 per cent higher than starting salaries.

The difference between statutory starting salaries and salaries after 15 years' service is an indication of the financial returns to experience. On average, across OECD countries, statutory salaries for primary and lower secondary teachers with 15 years' experience are 35 to 36 per cent higher than starting salaries. The difference ranges from below 15 per cent in Iceland and Turkey to more than 95 per cent in New Zealand (Tables D1.1*a*, *b*). In most countries, the growth rates for salaries are similar for primary, lower secondary and general upper secondary teachers.

Salaries for vocational upper secondary teachers are the same as those for teachers of upper secondary general programmes in eight out of the 18 countries reporting data on vocational upper secondary teachers (Tables D1.1*c*, *d*).

A public primary or secondary school teacher takes an average of 25 years to progress from minimum to maximum salary.

A public primary or secondary school teacher takes an average of 25 years to progress from minimum to maximum salary, with a range of between seven and 42 years. In Australia, Denmark, England and New Zealand, public teachers reach the maximum salary after less than ten years' service. In Hungary, Korea and Spain, by contrast, it takes between 37 and 42 years to reach the maximum salary (Tables D1.1*a*-*d*).

In primary and lower secondary education, England, Mexico and New Zealand have the largest average annual increases in salary (between 8 and 12 per cent). In these countries, teachers reach the maximum salary rapidly – in eight to 11 years. However, in Portugal, which also has a large average annual increase in the salary scale (6 per cent), the maximum salary is only reached after 26 years. Denmark has a small average increase of 2 per cent for primary and lower secondary and 6 per cent for upper secondary general programmes. It takes eight years to reach the maximum salary in Denmark (Tables D1.1*a*-*c*).

Teaching experience, teacher training and qualifications are often the criteria for increments to the basic salary scale.

Starting salary levels and the amount of time taken to progress from one salary increment to the next are often crucial factors for those who are considering entry into the teaching profession. While pay scales are defined in many countries by the teachers' number of years' teaching experience and/ or training and qualifications (Tables D1.1*a-d*), in reality the structure of basic pay scales is often more complex. Many countries, for example, also include such elements as a 13th month, or holiday or regional bonuses as regular parts of the statutory salary (see "Salary Scales in the Czech Republic"). Other countries do not use a system of scheduled or statutory salary scales at all (see "Individual Salaries in Sweden").

Thus, in order to understand how schools in different countries seek to attract and retain qualified teachers, it is necessary to look in greater detail at salary scale structures and incentive schemes for teachers (see Annex 3).

Salary scales in the Czech Republic

In the Czech Republic, statutory salaries for all public servants are determined by two dimensions. The first dimension refers to the nature of employees' work and to their qualifications for this work (salary classes), while the second dimension refers to the length of employees' experience (salary grades). With the exception of tertiary education, teachers are assigned to a particular salary class centrally. At the tertiary level, the assignment of an individual teacher to a salary class is entirely a matter for the school authority. The values of the various salary classes and grades are set without regional differences. There is also a salary increment or "additional salary" (13th month) that is set centrally by government and included as part of the statutory salary.

The full-time salary scale for teachers in public schools comprises 12 "salary grades" based on years of experience (less than 1 year, less than 2 years, less than 4 years, etc., up to more than 32 years).

Teachers' Common Basic Salary Scale in Ireland

There are 25 points on the Teachers' Common Basic Salary Scale in Ireland. Starting salaries for primary teachers commence at the second point on the salary scale plus an allowance for holding a degree from a recognised college of education/university. A post-primary teacher's starting salary is at the third point on the salary scale with an allowance for holding a degree and a higher diploma in education from a recognised university. Thus, it takes a primary teacher 23 years and a post-primary teacher 22 years to reach the maximum point of the scale.

After 15 years' experience, a primary teacher's starting salary is at the 17th point on the salary scale with an allowance for holding a degree from a recognised college of education/university. After 15 years' experience, a post-primary teacher's starting salary is at the 18th point on the salary scale with an allowance for holding a degree and a higher diploma in education from a recognised university.

Individual salaries in Sweden

The term "statutory salaries", defined as "scheduled salaries according to official pay scales", is not applicable in the Swedish context. In Sweden, teachers have individual salaries based upon collective agreements, a system which has been in effect since 1996. Educational qualifications, development activities and outstanding performance in teaching are criteria for the raising of salaries above base levels.

Enhancements to the basic salary

In addition to basic pay scales, many school systems have developed incentive schemes for teachers (see "Enhancements to Base Salary in New Zealand" and "Mexico and the Teacher Career Programme"), which may take the form of financial remuneration and/or a reduction in the number of teaching hours (Table D1.3, Annex 3). Together with the starting salary, such incentive schemes may be a factor in a person's decision whether to enter the teaching profession. Initial incentives for graduate teachers may include family allowances and bonuses for working in certain locations, higher initial salaries for higher than minimum teaching certification or qualifications, and additional compensation for those holding educational qualifications in multiple subjects or with certification to teach students with special educational needs (Table D1.3).

Together with the starting salary, enhancements to the basic salary are a factor in the decision whether to enter the teaching profession.

Once in the teaching profession, teaching personnel must be evaluated, encouraged, recognised and rewarded for good teaching. One way in which schools can provide incentives for good teaching is by awarding additional remuneration for completion of professional development activities, for involvement in special activities, for taking on extra management responsibilities, or for outstanding performance in teaching (Table D1.3).

In at least ten countries, permanent salary increases are given to all or most teachers with an educational qualification or certification higher than the minimum, such as a Master's degree or PhD; to all those taking on management responsibilities in addition to teaching duties; to teachers working in certain locations; and to teachers teaching children with special educational needs.

Mexico and the Teacher Career Programme

In 1992, under the National Agreement for the Modernisation of Basic Education, and with funding from the Chamber of Deputies and state authorities, the Teacher Career Programme (TCP) was established as a system of horizontal promotion for academic staff. Each year, the Ministry of Education and the Teachers' Union promote some teachers to the next salary step. Three categories of teachers may benefit: Category 1 promotes classroom teachers, Category 2 promotes educators who perform administrative or supervisory functions; and Category 3 promotes teachers who carry out technical pedagogical activities. Components of the evaluation system are:

1. Length of service (all categories).
2. Academic qualifications (all categories).
3. Professional background, or the knowledge required by a teacher to perform his/her duties.
4. Modernisation courses and professional development at state and national levels (all categories).
5. Professional performance (all categories).
6. Achievement levels of students in the class or subject (Category 1 only).
7. Academic performance, or all the actions involved in students' progress and in teachers' professional preparation (Category 2 only).
8. Educational support for research, updating and material preparation activities that contribute to improving the teaching-learning process and procedures (Category 3 only). And
9. Work throughout the day (morning and evening school sessions) and supervisory responsibilities.

In order to be promoted under TCP, candidates must satisfy residency conditions:

10. Most rural or urban areas, where total residency must be at least 14 years. Or
11. "Underprivileged" areas, where total residency must be at least eight years (*e.g.*, no piped water supply, no electricity, limited access to the nearest town).

Enhancements to base salary in New Zealand

The individual school management determines additional payments for recruitment, reward and retention purposes for:

1. Holding an approved higher educational qualification or certification.
2. Management responsibilities in addition to teaching duties.
3. Teaching students with special needs, *e.g.*, Resource Teachers (itinerant teachers who provide teaching support to children with specific learning needs, and to their schools).
4. "Special tasks"
   - Training student teachers (Associate Teacher Allowance), which is an hourly allowance based on the number of timetabled contact hours.
   - Career guidance counselling (Careers Advisor Allowance). Secondary school teachers appointed as careers advisors receive an annual allowance.
   - Teachers appointed to control buses (Bus Controller Allowance), who receive an allowance based on the number of routes controlled. And
   - Secondary school teachers appointed as co-ordinators for sixth form certificate assessment for evening classes, who receive an hourly allowance for up to nine hours per annum (Sixth Form Certificate Assessment Allowance).
5. Teaching in a locality designated as isolated from the nearest population centre.
6. Outstanding performance in teaching.
7. Teaching courses in a particular field. And
8. "Other":
   - Teaching in schools which are difficult to staff or with a staffing entitlement of three or fewer full-time equivalent teachers (Staffing Incentive Allowance).
   - Teaching Maori students, which is an annual allowance (Maori Immersion Teaching Allowance).
   - Teachers employed in a "normal" school (*i.e.*, a primary or intermediate school which has an arrangement with training providers to accept regular trainee teacher placements) (Normal School Allowance).
   - Mobile reserve allowance. An additional allowance is provided if the teacher remains in that position for a fixed term and for the duration of the term.
   - Service allowance, which is paid to secondary teachers who have been at the top step of their current qualification group for three years or more. At the primary level, this allowance is only available to those who were in receipt of this allowance on 1 July 1992. And
   - Any extra/special tasks or duties that a teacher may perform (Special Duties Increment Allowance).

Point 2 is the most frequently awarded adjustment to base salary.

In at least ten countries, temporary pay rises are awarded 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.

Other criteria for bonuses include outstanding performance in teaching.

In several countries, salary increases are awarded to teachers for outstanding performance in teaching, family status and involvement in special activities such as extra-curricular activities (*e.g.*, sports and drama clubs, summer schools, homework clubs, etc.) (Chart D1.2).

It is often difficult for countries to separate bonuses from basic salary increments and to measure their financial value. While countries such as the Czech Republic, Finland, New Zealand, Portugal, Spain and the United States reported that bonuses for some teachers at the upper secondary level could amount to more than 20 per cent of salary, several countries were not able to provide quantitative data (Table D1.1c).

DEFINITIONS AND METHODOLOGIES

Data on statutory teachers' salaries and bonuses (Tables D1.1*a-d*) derive from the 2000 OECD-INES survey on Teachers and the Curriculum and refer to the school year 1998/1999. Salary data are reported in accordance with formal policies for public institutions.

***Data on statutory teachers' salaries and bonuses are from the* 2000 OECD-INES *survey on* Teachers and *the* Curriculum *and refer to the school year* 1998/ 1999.**

Statutory salaries (Tables D1.1*a-d*) refer to scheduled salaries according to official pay scales (see Annex 3). The salaries reported are defined as gross salaries (total sum of money that is paid by the employer for the labour supplied) minus 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 (Tables D1.1*a-d*) were converted using GDP and Purchasing Power Parities (PPPs) exchange rate data from OECD National Accounts 1999. The reference date for GDP per capita is 1999 (1 January to 31 December 1999), while the period of reference for teachers' salaries is 30 June 1998 to 30 June 1999. The reference date for PPPs is January 1999. Data are adjusted for inflation with reference to January 1999 for those countries with deviating fiscal years (*i.e.*, Australia and New Zealand) and for those countries where the exact period to which salaries apply is slightly different (*e.g.*, Hungary, Iceland, Norway and Spain), but only if this results in an adjustment of over 1 per cent. Small adjustments have been discounted because even for salaries referring to 1998/1999, the exact period for which the salaries apply will only be slightly different. Reference years for salaries are provided in Annex 3.

The starting salaries (Tables D1.1*a-d*) reported 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 his or her teaching career.

Salaries after 15 years' experience (Tables D1.1*a-d*) refer to the scheduled annual salary of a full-time classroom teacher with the minimum training necessary to be fully qualified and with 15 years' 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 his or her job.

The index used to compare primary teachers' salaries with those of other employees derives from a 1996 Survey of Compensation of Employees for Selected Occupations in General Government conducted by the EUROSTAT-OECD PPP Programme (Table D1.2). 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 from the 1988 version of the International Standard Classification of Occupations (ISCO) of the International Labour Office.

An enhancement to base salary is defined here as any difference in salary between what a particular teacher actually receives as earnings 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 on to a higher step on the same salary scale.

Table D1.1*a*. **Teachers' salaries in primary education (1999)**

Annual statutory teachers' salaries in public institutions in ***primary*** *education, in equivalent* US *dollars converted using* PPPs

	Starting salary/ minimum training	Salary after 15 years' experience/ minimum training	Salary at top of scale/ minimum training	Ratio of starting salary to GDP per capita	Ratio of salary after 15 years' experience to GDP per capita	Ratio of salary after 15 years' experience to GDP per capita (1994)	Ratio of salary after 15 years' experience to starting salary	Years from starting to top salary	Percentage additional bonus[1]	Salary after 15 years' experience per teaching hour
OECD countries										
Australia	25 661	36 971	37 502	1.04	1.50	m	1.44	9	8	44
Austria*	21 804	26 389	44 159	0.88	1.06	1.16	1.21	34	m	39
Belgium (Fl.)*	22 901	30 801	36 594	0.93	1.25	1.28	1.34	27	n	37
Belgium (Fr.)*	22 043	29 878	35 685	0.90	1.22	1.28	1.36	27	n	35
Czech Republic*	6 806	9 032	12 103	0.52	0.69	m	1.33	32	20	12
Denmark*	28 140	32 684	32 684	1.07	1.24	1.40	1.16	8	m	51
England*	19 999	33 540	33 540	0.89	1.50	m	1.68	9	m	m
Finland*	18 110	24 799	25 615	0.79	1.08	1.29	1.37	20	16	38
France	19 761	26 599	39 271	0.88	1.19	1.26	1.35	34	11	30
Germany*	29 697	36 046	38 996	1.26	1.53	1.65	1.21	28	n	46
Greece	19 327	23 619	28 027	1.29	1.58	1.27	1.22	33	m	30
Hungary*	5 763	8 252	11 105	0.50	0.72	m	1.43	40	4	14
Iceland	19 939	21 891	25 377	0.75	0.82	m	1.10	18	m	34
Ireland*	21 940	35 561	40 141	0.85	1.38	2.11	1.62	23	n	39
Italy*	19 188	23 137	28 038	0.87	1.04	1.10	1.21	35	m	31
Korea*	23 759	39 411	62 281	1.51	2.51	m	1.66	37	6	60
Mexico*	10 465	13 294	22 345	1.19	1.52	m	1.27	11	n	17
Netherlands	25 896	30 881	37 381	1.03	1.23	1.38	1.19	25	n	33
New Zealand*	16 678	32 573	32 573	0.91	1.78	1.27	1.95	8	42	33
Norway*	22 194	25 854	27 453	0.78	0.91	1.00	1.16	28	3	36
Portugal*	18 751	27 465	50 061	1.12	1.65	1.97	1.46	26	31	31
Scotland*	19765	32 858	32 858	0.88	1.47	m	1.66	11	m	35
Spain*	24 464	28 614	37 317	1.33	1.56	1.95	1.17	42	29	36
Sweden*	18 581	24 364	m	0.81	1.07	1.05	1.31	m	m	m
Switzerland*	33 209	43 627	51 813	1.20	1.57	1.65	1.31	25	m	49
Turkey*	9 116	10 327	11 541	1.21	1.37	1.65	1.13	27	m	14
United States	25 707	34 705	43 094	0.76	1.03	1.22	1.35	30	18	36
Country mean	**20 358**	**27 525**	**33 752**	**0.97**	**1.32**	**1.42**	**1.36**	**25**	**11**	**34**
WEI participants										
Argentina	9 857	13 327	15 647	0.86	1.16	m	1.35	21-24	8	2
Brazil	4 818	7 191	10 877	0.74	1.10	m	1.49	25	n	9
Chile	14 459	15 868	19 435	1.68	1.84	m	1.10	30	32	19
Indonesia	1 624	2 938	5 598	0.62	1.12	m	1.81	33	33	1
Jordan	8 096	10 652	27 347	2.18	2.87	m	1.32	41	n	14
Malaysia	7 056	11 803	17 001	0.88	1.46	m	1.67	29	7	15
Peru	4 752	4 752	4 752	1.05	1.05	m	1.00	at least 20	10	8
Philippines	12 620	13 715	14 609	3.52	3.83	m	1.09	22	21	12
Thailand	5 781	14 208	27 098	1.00	2.47	m	2.46	37	n	19
Tunisia	11 706	12 877	13 449	2.04	2.25	m	1.10	35	n	22
Uruguay	9 842	11 675	14 724	1.17	1.39	m	1.19	32	48	20

1. In most countries, the percentage additional bonus is equal to the average of the maximum bonus applicable to starting salary and the maximum bonus applicable to salary at the top of the scale.

* See Annex 3 for notes.

Source: OECD.

Table D1.1*b*. **Teachers' salaries in lower secondary education (1999)**

Annual statutory teachers' salaries in public institutions in lower secondary education, in equivalent US dollars converted using PPPs

	Starting salary/ minimum training	Salary after 15 years' experience/ minimum training	Salary at top of scale/ minimum training	Ratio of starting salary to GDP per capita	Ratio of salary after 15 years' experience to GDP per capita	Ratio of salary after 15 years' experience to GDP per capita (1994)	Ratio of salary after 15 years' experience to starting salary	Years from starting to top salary	Percentage additional bonus[1]	Salary after 15 years' experience per teaching hour
OECD countries										
Australia	26 658	37 138	37 577	1.08	1.50	m	1.39	8	7	47
Austria*	22 421	27 503	46 735	0.90	1.10	1.26	1.23	34	m	42
Belgium (Fl.)*	23 428	32 819	40 017	0.95	1.34	1.37	1.40	27	n	46
Belgium (Fr.)*	22 561	31 903	39 115	0.92	1.30	1.37	1.41	27	n	44
Czech Republic*	6 806	9 032	12 103	0.52	0.69	m	1.33	32	18	13
Denmark*	28 140	32 684	32 684	1.07	1.24	1.40	1.16	8	m	51
England*	19 999	33 540	33 540	0.89	1.50	m	1.68	9	m	m
Finland*	20 394	28 225	29 530	0.89	1.23	1.41	1.38	20	16	43
France	21 918	28 757	41 537	0.98	1.28	1.39	1.31	34	11	45
Germany*	33 196	38 596	43 945	1.41	1.63	1.80	1.16	28	n	53
Greece	19 650	23 943	28 987	1.31	1.60	1.27	1.22	33	m	38
Hungary*	5 763	8 252	11 105	0.50	0.72	m	1.43	40	4	15
Iceland	19 939	21 891	25 377	0.75	0.82	m	1.10	18	m	34
Ireland*	23 033	35 944	40 523	0.89	1.39	2.23	1.56	22	n	49
Italy*	20 822	25 397	31 062	0.94	1.15	1.19	1.22	35	m	41
Korea*	23 613	39 265	62 135	1.50	2.50	m	1.66	37	5	77
Mexico*	13 357	15 592	27 643	1.52	1.78	m	1.17	11	n	19
Netherlands	26 874	33 056	41 066	1.07	1.31	1.49	1.23	24	n	38
New Zealand*	16 678	32 573	32 573	0.91	1.78	1.32	1.95	8	38	35
Norway*	22 194	25 854	27 453	0.78	0.91	1.00	1.16	28	3	41
Portugal*	18 751	27 465	50 061	1.12	1.65	2.44	1.46	26	31	41
Scotland*	19 765	32 858	32 858	0.88	1.47	m	1.66	11	m	37
Spain*	26 669	31 178	40 082	1.45	1.70	1.95	1.17	42	39	56
Sweden*	18 704	24 487	m	0.82	1.07	1.15	1.31	m	m	m
Switzerland*	39 162	52 247	60 615	1.41	1.88	1.98	1.33	23	m	61
Turkey*	8 144	9 355	10 568	1.08	1.24	1.36	1.15	m	m	16
United States	25 155	33 418	44 397	0.74	0.99	1.18	1.33	30	22	35
Country mean	**21 252**	**28 629**	**35 511**	**1.01**	**1.36**	**1.50**	**1.35**	**25**	**11**	**41**
WEI participants										
Argentina	15 789	22 266	26 759	1.37	1.93	m	1.41	21-24	7	3
Brazil	11 970	11 180	13 954	1.83	1.71	m	0.93	25	n	14
Chile	14 459	15 868	19 435	1.68	1.84	m	1.10	30	32	19
Indonesia	1 624	2 938	5 598	0.62	1.12	m	1.81	32	33	2
Jordan	8 096	10 652	27 347	2.18	2.87	m	1.32	41	n	14
Malaysia	13 575	21 568	29 822	1.68	2.68	m	1.59	22	7	28
Peru	4 701	4 701	4 701	1.04	1.04	m	1.00	at least 20	10	8
Philippines	12 620	13 715	14 609	3.52	3.83	m	1.09	22	21	12
Thailand	5 781	14 208	27 098	1.00	2.47	m	2.46	37	n	22
Tunisia	15 062	16 467	17 169	2.63	2.87	m	1.09	30	n	36
Uruguay	9 842	11 675	14 724	1.17	1.39	m	1.19	32	48	21

1. In most countries, the percentage additional bonus is equal to the average of the maximum bonus applicable to starting salary and the maximum bonus applicable to salary at the top of the scale.
* See Annex 3 for notes.

Source: OECD.

Table D1.1c. **Teachers' salaries in upper secondary general education (1999)**

Annual statutory teachers' salaries in public institutions in ***upper secondary*** *education,* ***general programmes****, in equivalent* US *dollars converted using* PPPs

	Starting salary/ minimum training	Salary after 15 years' experience/ minimum training	Salary at top of scale/ minimum training	Ratio of starting salary to GDP per capita	Ratio of salary after 15 years' experience to GDP per capita	Ratio of salary after 15 years' experience to starting salary	Years from starting to top salary	Percentage additional bonus[1]	Salary after 15 years' experience per teaching hour
OECD countries									
Australia	26 658	37 138	37 577	1.08	1.50	1.39	8	7	48
Austria*	24 027	30 376	53 443	0.96	1.22	1.26	34	m	49
Belgium (Fl.)*	29 075	41 977	50 461	1.18	1.71	1.44	25	n	62
Belgium (Fr.)*	28 151	41 079	49 581	1.15	1.67	1.46	25	n	61
Czech Republic*	8 052	10 695	14 316	0.62	0.82	1.33	32	22	16
Denmark*	29 986	40 019	42 672	1.14	1.52	1.33	7	m	80
England*	19 999	33 540	33 540	0.89	1.50	1.68	9	m	m
Finland*	21 047	29 530	31 325	0.92	1.29	1.40	20	23	47
France	21 918	28 757	41 537	0.98	1.28	1.31	34	11	49
Germany*	35 546	41 745	49 445	1.51	1.77	1.17	28	n	61
Greece	19 650	23 943	28 987	1.31	1.60	1.22	33	m	38
Hungary*	6 908	10 355	13 217	0.60	0.90	1.50	40	4	19
Iceland	20 775	25 795	30 954	0.78	0.97	1.24	18	m	56
Ireland*	23 033	35 944	40 523	0.89	1.39	1.56	22	n	49
Italy*	20 822	26 175	32 602	0.94	1.18	1.26	35	m	43
Korea*	23 613	39 265	62 135	1.50	2.50	1.66	37	5	80
Netherlands	27 133	46 148	54 720	1.08	1.83	1.70	24	n	53
New Zealand*	16 678	32 573	32 573	0.91	1.78	1.95	8	34	37
Norway*	22 194	25 854	27 453	0.78	0.91	1.16	28	3	51
Portugal*	18 751	27 465	50 061	1.12	1.65	1.46	26	31	46
Scotland*	19 765	32 858	32 858	0.88	1.47	1.66	11	m	36
Spain*	29 058	33 988	43 100	1.58	1.85	1.17	39	36	62
Sweden*	20 549	26 210	m	0.90	1.15	1.28	m	m	m
Switzerland*	46 866	62 052	70 548	1.69	2.23	1.32	23	m	92
Turkey*	8 144	9 355	10 568	1.08	1.24	1.15	27	m	19
United States	25 405	36 219	44 394	0.75	1.07	1.43	30	27	38
Country mean	**22 839**	**31 887**	**39 144**	**1.05**	**1.46**	**1.40**	**25**	**12**	**50**
WEI participants									
Argentina	15 789	22 266	26 759	1.37	1.93	1.41	21-24	7	3
Brazil	12 598	16 103	18 556	1.93	2.47	1.28	25	n	20
Chile	14 644	16 214	19 597	1.70	1.88	1.11	30	33	19
Indonesia	1 689	3 537	5 598	0.64	1.35	2.09	32	33	2
Jordan	8 096	10 652	27 347	2.18	2.87	1.32	41	n	14
Malaysia	13 575	21 568	29 822	1.68	2.68	1.59	22	7	28
Peru	4 701	4 701	4 701	1.04	1.04	1.00	at least 20	10	8
Philippines	12 620	13 715	14 609	3.52	3.83	1.09	22	21	12
Thailand	5 781	14 208	27 098	1.00	2.47	2.46	37	n	22
Tunisia	18 235	19 770	20 577	3.18	3.45	1.08	30	n	42
Uruguay	10 305	12 489	15 585	1.22	1.48	1.21	32	47	22

1. In most countries, the percentage additional bonus is equal to the average of the maximum bonus applicable to starting salary and the maximum bonus applicable to salary at the top of the scale.

* See Annex 3 for notes.

Source: OECD.

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Table D1.1*d*. **Teachers' salaries in upper secondary vocational education (1999)**

*Annual statutory teachers' salaries in public institutions in **upper secondary** education, **vocational programmes**, in equivalent US dollars converted using PPPs*

	Starting salary/ minimum training	Salary after 15 years' experience/ minimum training	Salary at top of scale/ minimum training	Ratio of starting salary to GDP per capita	Ratio of salary after 15 years' experience to GDP per capita	Ratio of salary after 15 years' experience to starting salary	Years from starting to top salary	Percentage additional bonus[1]	Salary after 15 years' experience per teaching hour
OECD countries									
Austria*	22 893	28 343	48 708	0.92	1.14	1.24	34	m	46
Czech Republic*	8 028	10 662	14 263	0.61	0.82	1.33	32	21	16
Denmark*	a	a	a	a	a	a	a	a	a
Finland*	17 131	23 331	24 799	0.75	1.02	1.36	20	12	m
France	21 918	28 757	41 537	0.98	1.28	1.31	34	11	44
Germany*	35 096	41 096	48 395	1.49	1.74	1.17	28	n	59
Greece	19 650	23 943	28 987	1.31	1.60	1.22	33	m	38
Hungary*	7 080	10 653	14 175	0.62	0.93	1.50	40	4	19
Iceland	20 775	25 795	30 954	0.78	0.97	1.24	18	m	56
Ireland	a	a	a	a	a	a	a	a	a
Italy*	20 822	26 175	32 602	0.94	1.18	1.26	35	m	43
Korea*	23 613	39 265	62 135	1.50	2.50	1.66	37	7	78
Netherlands	27 030	41 066	48 010	1.07	1.63	1.52	23	n	49
New Zealand*	a	a	a	a	a	a	a	a	a
Norway*	22 194	25 854	27 453	0.78	0.91	1.16	28	3	44
Portugal*	18 751	27 465	50 061	1.12	1.65	1.46	26	31	46
Scotland	a	a	a	a	a	a	a	a	a
Spain*	27 958	32 419	41 929	1.52	1.76	1.16	42	37	59
Sweden*	21 903	25 225	m	0.96	1.10	1.15	m	m	m
Switzerland*	43 582	54 493	66 311	1.57	1.96	1.25	23	m	75
Turkey*	10 414	11 625	12 838	1.39	1.55	1.12	24	m	12
United States	25 405	36 219	44 394	0.75	1.07	1.43	30	27	38
Country mean	**21 902**	**28 466**	**37 503**	**1.06**	**1.38**	**1.31**	**30**	**17**	**45**
WEI participants									
Argentina	a	a	a	a	a	a	a	a	a
Brazil	a	a	a	a	a	a	a	a	a
Chile	14 644	16 214	19 597	1.7	1.9	1.1	30	33	19
Indonesia	1 689	3 537	5 598	0.6	1.3	2.1	32	33	2
Jordan	8 096	10 652	27 347	2.2	2.9	1.3	41	n	15
Malaysia	13 575	21 568	29 822	1.7	2.7	1.6	22	7	27
Peru	a	a	a	a	a	a	a	a	a
Philippines	a	a	a	a	a	a	a	a	a
Thailand	5 781	14 208	27 098	1.0	2.5	2.5	37	n	23
Tunisia	16 545	18 105	18 886	2.9	3.2	1.1	30	n	n
Uruguay	10 305	12 489	15 585	1.2	1.5	1.2	32	47	22

1. In most countries, the percentage additional bonus is equal to the average of the maximum bonus applicable to starting salary and the maximum bonus applicable to salary at the top of the scale.

* See Annex 3 for notes.

Source: OECD.

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Table D1.2. **Comparison of average primary teachers' salaries with those of selected other public sector employees (1996)**

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

	Draughtsman	Pre-primary teacher	Computer operator	Nurse	Social worker	Executive official I[1]	Mathematics teacher in secondary education	Sanitary engineer	Civil engineer	Executive official II[1]	Head teacher	Public health physician
Australia	++	-	-	o	o	o	+	++	++	++	++	++
Austria	-	-	-	+	o	o	++	++	++	++	++	
Canada	+	o	o	++	++	++		++	++	++	+	++
Czech Republic	-	-	–	o	++	o	+	+	++	+	+	++
Denmark	o	o	o	o	o	++	++	++	+	++	++	++
France	+	o	+	o	+	o	+	++	++	++	++	++
Germany	-	-	-	-	-	+	+	+	+	+	+	+
Greece	-	o	-	o	-	-	o		-	-	+	++
Hungary		-		-		o	+			++	++	
Iceland		-	+	+	+	o	++	++	++	+	++	++
Ireland	-		–	+	+	-	o	o	++	+	++	++
Israel	o	o	o	-	o	++	+	++	++	++	++	++
Italy	o	o	o	+	+	+	o	++	++	++	++	++
Japan	++	o	-	o		++	o	o	++	++	++	o
Luxembourg	-	o	-	-	+	o	++	++	++	+	++	++
Mexico	–	-	-	-	-	++	+			++	++	o
Netherlands	o	-	-	-	+	+	+	++	++	+	++	++
Norway		o	o	o		+	+	++	++	+	++	++
Poland				-			o					++
Portugal	–	o	o	o	++	–	o	++	++	–	o	++
Slovak Republic	+	-	o	-	o	+	o	++	++	+	++	+
Spain	-	o	-	o	-	-	+	++	++	+	++	++
Sweden	-	-	-	o	o	-	+	o	o	+	++	++
Switzerland	–	-	-	-	-	o	+	+	+	o	++	++
Turkey	-	o	-	+	++	-	o	+	+	-	++	+
United Kingdom	-	o	-			-	+	o	o	o	++	
United States	-		–	o	+		o	++	++			++

Comparison with a primary teacher's salary.

o Between −10 and +10 per cent of a primary teacher's salary.
- More than 10 but less than 30 per cent lower than a primary teacher's salary.
– More than 30 per cent lower than a primary teacher's salary.
+ More than 10 but less than 30 per cent higher than a primary teacher's salary.
++ More than 30 per cent higher than a primary teacher's salary.
1. Unlike Executive Official I, Executive Official II does not require a Tertiary-type A qualification and sometimes works to an Executive Official II.
Source: EUROSTAT-OECD Purchasing Power Parities Programme (1996). Occupations are classified according to ISCO-88 (Categories 1 to 3).

Table D1.3. **Adjustments to base salary for teachers in public schools (1999)**

Types of adjustments to base salary awarded to teachers in public schools, by frequency of adjustment awarded to teachers all or most of the time

	Management responsibilities in addition to teaching duties		Teaching students with special educational needs		Special tasks		Teaching more classes or hours than required by a full-time contract		Educational qualification higher than minimum		School location allowances		Other		Special activities		Holding a higher than minimum level of teacher certification		Outstanding performance in teaching		Age (independent of years of teaching)		Successful completion of professional development activities		Teaching courses in a particular field		Family status (e.g. married, number of children)		Educational qualification in multiple subjects	
	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T
OECD countries																														
Australia	●	●	●	●		●		○	●			●				•	•		●	●	○		•		○		●	●	○	
Austria		●	●			●		●						●						•								●		
Belgium (Fl.)			●														●													
Belgium (Fr.)			●																											
Czech Republic		●		●		●		●		●			●			●		•		●	●			•			●			
Denmark		●				●		●								•														
England	●	•	●	○		•					●					•			•	•			•	•						
Finland	●		●				●		●		●					●	●		○		●		○		○		○		○	
France		●		●		●		●				●				•												●		
Germany								•																			●			
Greece					●		●		●		●																●			
Hungary	●		●		●			●	●		●		●			●				•			●			●			●	
Iceland	●	●	●		●		●				•					•					●				●					
Ireland	●								●		●		●				●													
Italy		●				●		●								●								●				●		
Mexico	●								●			●	●	●			●		●				●							
Netherlands			●																											
New Zealand	●	●	●			●			●		●			●			●			•						•				
Norway	●						●		●			•	●																	
Portugal		●		●		●		●	●										○											
Scotland		•							•		•																			
Spain		●										○																○		
Sweden		●	•				●		•		•				●		•		•				•		•				•	
Switzerland	•					•	•									•											●			
Turkey						●		●	●	•	●			●													●			
United States	●								●							●	●													
WEI participants[1]																														
Argentina												●		●●														•		
Brazil		●							●			●	●				●						●							
Chile	●										●	●								●										
Indonesia		•	○			•		•	●		○					•		•			●			•		•	●			
Jordan	●					●		●	●			●				●	●								●		•			
Malaysia		●		•					●								•		●						•					
Paraguay											●						●	●		•			●		●		●			
Peru		●						●	●			●	●														●			
Philippines			•									•					●			●										
Thailand								●	●		○		•				●													
Uruguay		•	•				•				●					•												●		
Zimbabwe	●									●								●						●						

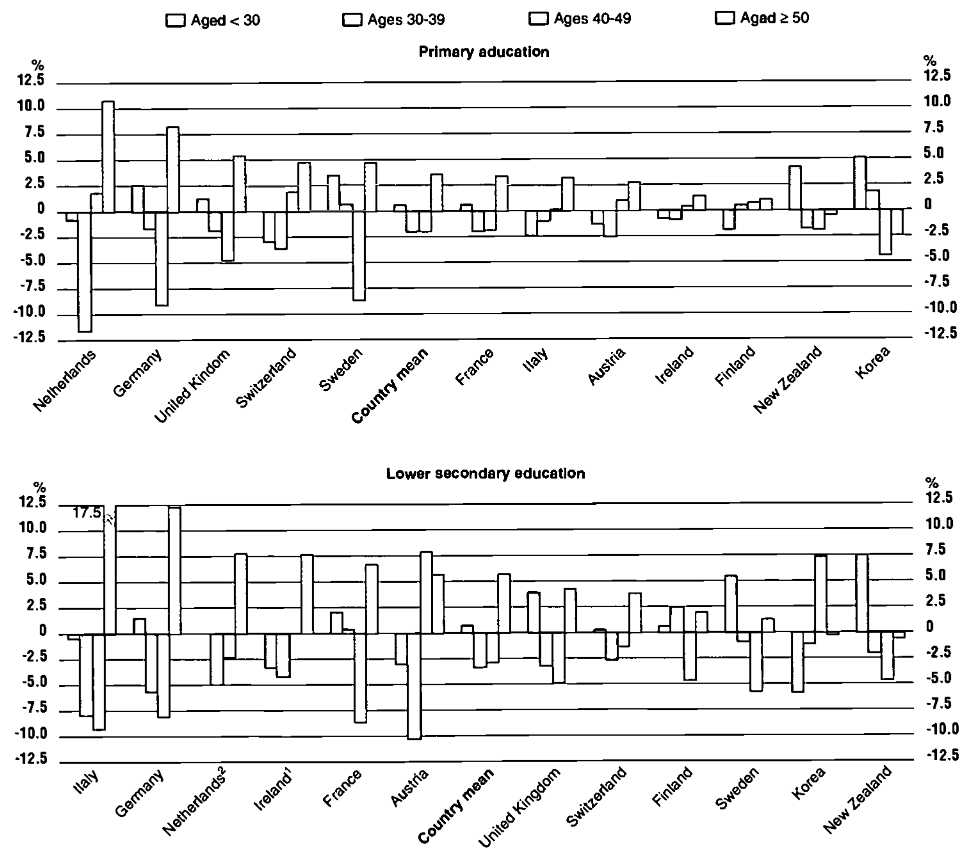
● Adjustment is given all the time or most of the time
• Adjustment is given occasionally
○ Adjustment is rarely given
P Permanent salary adjustment
T Temporary salary adjustment
1. Year of reference 1998 for all WEI countries.
Source: OECD. See Annex 3 for more detailed descriptions of adjustments to base salary.

AGE AND GENDER DISTRIBUTION OF TEACHERS, AND STAFF EMPLOYED IN EDUCATION

- In 16 out of 18 OECD countries, most primary teachers are at least 40 years old, and in Germany and Sweden, more than one third of teachers are older than 50 years.
- Compared with 1996, the average proportion of teachers aged 50 years or over increased by 4 per cent in primary education. In Germany, the Netherlands and the United Kingdom this proportion rose by more than 5 per cent.
- The variations are greater in lower secondary than in primary education. In lower secondary education, the proportion of teachers aged 50 years or over rose by an average of 6 per cent over the period 1996 to 1999. The increase exceeded 5 per cent in Austria, France, Ireland and the Netherlands, and 10 per cent in Germany and Italy.

Chart D2.1. **Change in the age distribution of teachers (1996 and 1999)**

Change in the age distribution of teachers in public and private institutions between 1996 and 1999 (1996 = 0), by level of education



Note: While data for 1999 include private and public institutions, data for 1996 are limited to public institutions.
1. Lower secondary teachers in 1999 includes upper secondary and post-secondary non-tertiary teachers.
2. Lower secondary teachers in 1999 includes upper secondary teachers.
Countries are ranked in descending order of the difference between 1996 and 1999 in the percentage of teachers aged 50 years or older.
Source: OECD.

D2

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POLICY CONTEXT

This indicator shows the age and gender distribution of teachers at 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 (indicator A1). 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 D1). With seniority as an important criterion in teachers' pay scales and additional financial incentives required to attract new teachers to the teaching profession (indicator D1), the age distribution of teachers can also have a considerable impact on educational budgets.

... and the place of teaching and non-teaching staff in the labour market.

The percentage of the total labour force employed in education 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 D1), are both important factors affecting the financial resources that countries must commit to education.

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. 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.

In 16 out of 18 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 D2.1). In Canada, Germany, Italy, the Netherlands and Sweden, 60 per cent or more of primary teachers are over 40 years of age. On the other hand, Belgium (Flemish Community) and Korea seem to have a comparatively young teaching force; more than 50 per cent of primary teachers are younger than 40 years of age.

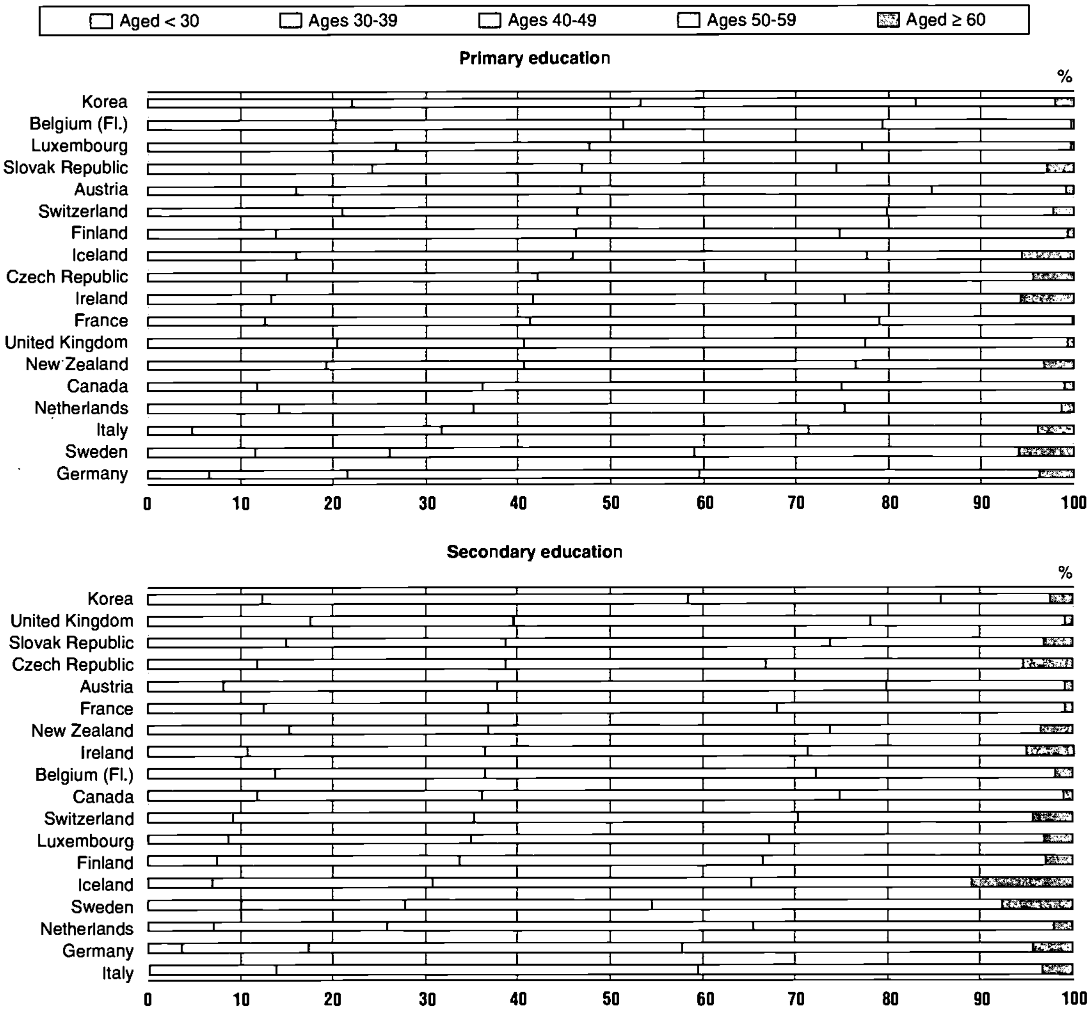
In 16 out of 18 countries, secondary teachers are older than primary teachers. In the Flemish Community of Belgium, Finland, Iceland, Italy, Luxembourg and Switzerland, the proportion of secondary teachers aged 40 years or over is at least 11 percentage points higher than that of primary teachers. As teachers' salaries (indicator D1) 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 the Flemish Community of Belgium, Korea, Luxembourg, the Slovak Republic, Switzerland and the United Kingdom are under 30 years of age; fewer than 10 per cent of teachers in Germany and Italy are in this age group. Differences between countries in

Chart D2.2. **Age distribution of teachers (1999)**

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.
Source: OECD. Table D2.1.

D2

the proportion of young teachers can be explained in part by the typical completion ages of tertiary education (Annex 1) and entry requirements for the teaching profession (*Education at a Glance* 2000, indicator D2).

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 the largest proportions of lower secondary teachers over the age of 50 (more than 40 per cent). 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 D2.1).

Change in the age distribution of teachers between 1996 and 1999

In most countries, the teaching force continues to age.

In ten out of 12 countries for which comparable trend data are available for primary and lower secondary education, the proportion of teachers over the age of 50 increased between 1996 and 1999. Compared with 1996, the average proportion of teachers aged 50 years or older increased by 4 per cent in primary education. In Germany, the Netherlands and the United Kingdom, this proportion rose by more than 5 per cent. The variations are greater in lower secondary than in primary education. In lower secondary education, the proportion of teachers aged 50 years or more rose by an average of 6 per cent over the period 1996 to 1999. The increase exceeded 5 per cent in Austria, France, Ireland and the Netherlands, and 10 per cent in Germany and Italy (Chart D2.1).

The entry of new teachers into the profession is important in order to compensate for the large number of teachers who will reach retirement age in the next decade. Over the period 1996 to 1999, the average proportion of teachers aged under 30 years remained relatively stable among OECD countries at both the primary and secondary level.

Gender

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

In all OECD countries, pre-primary and primary teachers are predominantly women. Canada and France are the only countries where more than 20 per cent of pre-primary teachers are men. With the exceptions of Denmark and Luxembourg, 65 per cent or more of the primary teachers in OECD countries are women (Table D2.2).

The trend is less pronounced in lower secondary education. In all OECD countries, an average of two out of five teachers are men. The Czech Republic and Hungary have the lowest percentage of male teachers in lower secondary schools (19 and 14 per cent respectively), while Luxembourg, Mexico and Switzerland have the highest (62, 51 and 55 per cent respectively).

In 15 out of 18 OECD countries, the gender gap in teaching is wider among younger teachers than among older teachers, even though over half of primary teachers aged 50 years or older are women. The exception is Korea, where women form a minority among older primary teachers and a clear majority among younger primary teachers (Table D2.3).

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

Although women 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, women are less well represented at higher levels of education than at lower levels. At the upper secondary level, the percentage of teachers who are women ranges from 40 per cent or less in Denmark, Germany, Korea, the Netherlands and Switzerland to between 59 and 67 per cent in Canada, Hungary, Italy and the Slovak Republic. At the tertiary-type A and advanced research programmes level, with the exception of the Czech Republic, 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 one quarter in the Flemish Community of Belgium, Korea and Switzerland to over 40 per cent in Australia, the Czech Republic, Finland and Iceland (Table D2.2).

Staff employed in education

The education sector occupies a significant place in OECD labour markets, comprising, on average, 5.4 per cent of the total labour force...

The education sector comprises a significant proportion of the labour market in all OECD countries. On average, 5.4 per cent of the total labour force work in education, including teachers, teachers' aides and research assistants, professional support personnel, management and administrative personnel, and other personnel who support the maintenance and operation of schools (Table D2.5).

... the largest group is teachers, who represent an average of 3.5 per cent of the total labour force.

The vast majority of these educational personnel are teachers. If all levels of education are taken together, teachers account on average for 3.5 per cent of the total labour force. Combined primary and secondary teachers account for 2.6 per cent of the total labour force, while those at the tertiary level account for 0.6 per cent. However, there is substantial variation between countries in the proportion of the labour force who are teachers. The number of teachers in full and part-time employment in primary and secondary education combined ranges from 1.5 per cent or less of the total labour force in Japan and Korea to 3.6 per cent or more in the Flemish Community of Belgium, Hungary and Norway. At the tertiary level this proportion ranges from 0.3 per cent or less in Italy, Turkey and the United Kingdom to 0.8 per cent or more in Canada and Iceland. Teachers' aides and research assistants also account for a large proportion of instructional personnel. In New Zealand, Turkey and the United States, research assistants represent more than 18 per cent of instructional personnel at the tertiary level (Table D2.4).

The variation between countries is influenced by factors such as the size of the school-age population, average class sizes, total instruction time and teachers' working time.

The variation between countries in the relative size of the teaching force cannot be explained solely by differences in the size of the school-age population (indicator A1), but is also affected by the average size of classes, the total instruction time of students (indicator D4), teachers' average working time (indicator D3), and the division of teachers' time between teaching and other duties (indicator D3).

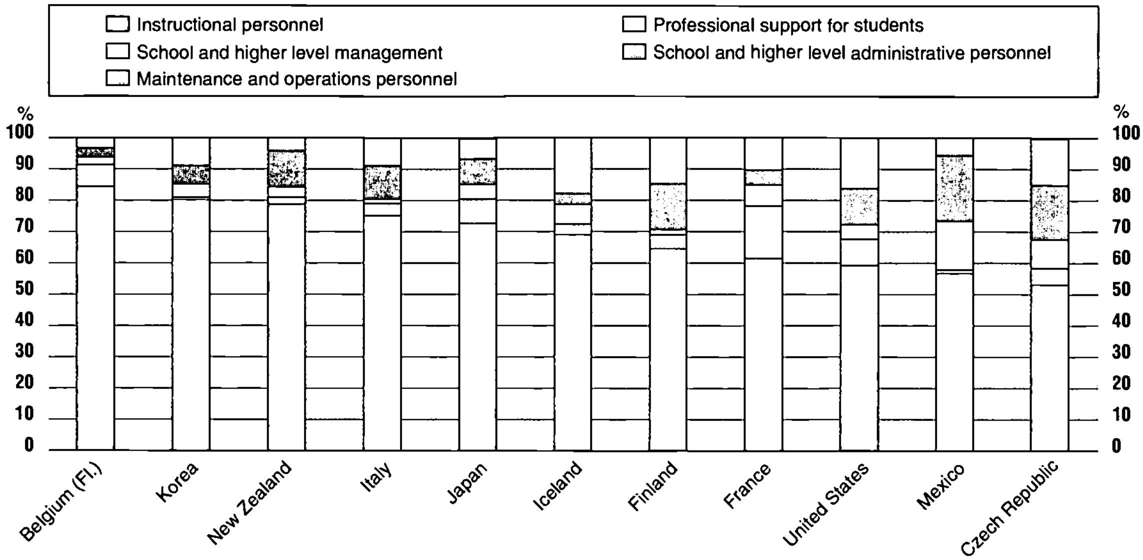
There are significant differences between OECD countries in the distribution of educational staff between teaching and other categories, reflecting differences between countries in the organisation and management of schooling. Among the 11 countries for which data are available for each category of personnel employed in education (Chart D2.3), the staff not classified as instructional personnel represent on average 31 per cent of the total teaching and non-teaching staff. In seven of these countries, these staff represent between 20 and 40 per cent of total teaching and non-teaching staff. This proportion exceeds 40 per cent in the Czech Republic, Mexico and the United States.

The relative proportions of teachers and other educational personnel differ widely from one country to another, reflecting differences in the organisation and management of schooling.

These differences reflect the numbers of staff which 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 the Czech Republic, Finland, Iceland and the United States, maintenance and operations personnel represent 15 per cent or more of all the staff employed in education. Administrative personnel represent more than 15 per cent of total teaching and non-teaching staff in the Czech Republic and Mexico, whereas the staff employed in school and higher level management exceed 6 per cent of total educational staff in the Czech Republic, France and Iceland,

Chart D2.3. **Teaching and non-teaching staff (1999)**

Distribution of teaching and non-teaching staff for all levels of education, based on head counts



Countries are ranked in descending order of the proportion of instructional personnel.
Source: OECD. Table D2.5.

and 10 per cent in Mexico (Chart D2.3). Finally, the staff employed to provide professional support for students are relatively numerous in France (17 per cent) and the United States (8 per cent).

On average, 77 per cent of teachers have full-time contracts.

The extent to which teachers work on a part-time basis can be an indication of the relative flexibility of the specialist educational labour market, which is largely within the public sector. In all OECD countries for which data on full-time and part-time personnel are available, an average of 77 per cent of teachers have full-time contracts. In Finland, Italy and Luxembourg, the proportion of teachers employed on a part-time basis is less than 10 per cent. At the other end of the scale are the Flemish Community of Belgium, Germany, Iceland, Mexico, Norway and Switzerland, where between 30 and 52 per cent of all teachers are employed on a part-time basis (Table D2.4).

DEFINITIONS AND METHODOLOGIES

Data refer to the school year 1998/1999 and are based on the UOE data collection on education statistics administered in 2000 (for details see Annex 3).

Data on age and gender derive from the UOE Questionnaire 2000, reference year 1998/1999. Characteristics are measured as the percentage of teachers in each of the five age groups, by level of education. Data for 1996 included in Chart D2.1 derive from the 1998 OECD-INES survey on Teachers and the Curriculum and refer to the school year 1995/1996.

Data on educational personnel were also reported in the UOE Questionnaire 2000. The figures include staff employed in pre-primary, primary, secondary and tertiary education in both public and private schools and other institutions.

Instructional personnel comprises teacher as well as teachers' aides and teaching/research assistants.

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.

Teachers' aides and teaching/research assistants includes non-professional personnel or students who support teachers in providing instruction to students.

Non-instructional personnel comprises four categories:

i) *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.

ii) *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 head-masters, superintendents of schools, associate and assistant superintendents, commissioners of education and other management staff with similar responsibilities.

iii) *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.

iv) *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.

Full-time employment generally refers to "statutory hours", or "normal or statutory working hours" (as opposed to actual or total working time or actual teaching time). Part-time employment generally refers to persons employed to perform less than 90 per cent of the number of statutory working hours required of a full-time employee. The figures on the total labour force are taken from OECD's *Labour Force Statistics*.

Table D2.1. **Age distribution of teachers (1999)**

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				
	Age group					Age group					Age group				
	< 30	30-39	40-49	50-59	> = 60	< 30	30-39	40-49	50-59	> = 60	< 30	30-39	40-49	50-59	> = 60
OECD countries															
Austria*	16.0	30.7	38.0	14.4	0.9	9.2	30.7	43.2	16.3	0.5	6.8	28.1	40.5	23.3	1.3
Belgium (Fl.)*	20.2	31.2	27.9	20.4	0.3	x	x	x	x	x	13.8	22.6	35.9	25.8	1.9
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	15.1	27.0	24.6	28.8	4.5	14.7	27.3	25.4	28.1	4.5	9.4	26.3	30.6	27.6	6.2
Finland*	13.8	32.5	28.4	24.6	0.6	9.4	26.7	31.4	31.3	1.3	5.7	25.4	34.4	29.8	4.7
France	12.6	28.7	37.6	20.9	0.2	13.7	22.8	30.8	31.9	0.7	11.2	26.1	31.5	30.3	0.9
Germany	6.6	14.9	38.1	36.7	3.7	3.9	9.8	40.7	41.3	4.4	3.0	22.2	39.9	30.8	4.1
Iceland*	16.0	29.9	31.8	16.7	5.6	x	x	x	x	x	7.0	23.8	34.4	23.9	10.9
Ireland*	13.3	28.5	33.6	19.0	5.7	10.7	25.8	34.9	23.5	5.2	x	x	x	x	x
Italy*	4.7	27.0	39.7	24.7	3.9	n	9.0	46.4	41.4	3.2	0.2	17.7	45.0	33.7	3.4
Korea	22.0	31.2	29.8	15.1	2.0	14.4	49.0	23.1	10.9	2.6	10.6	43.7	30.9	12.7	2.2
Luxembourg[1]*	26.8	21.0	29.4	22.5	0.4	8.6	26.3	32.3	29.6	3.2	x	x	x	x	x
Netherlands*	14.2	21.0	40.1	23.2	1.4	x	x	x	x	x	7.1	18.7	39.7	32.4	2.1
New Zealand	19.3	21.3	36.0	20.2	3.3	16.9	21.4	36.4	21.8	3.4	13.2	21.5	37.8	23.9	3.6
Norway*	x	x	x	x	x	16.3	21.5	30.3	26.7	5.1	6.7	19.4	34.1	32.5	7.3
Slovak Republic	24.2	22.7	27.5	22.7	2.9	14.1	19.7	37.1	26.6	2.5	15.8	28.4	33.0	19.1	3.7
Sweden*	11.6	14.5	32.9	35.0	6.0	14.2	19.0	25.1	34.7	6.9	6.7	16.7	28.0	40.3	8.4
Switzerland[1]*	21.0	25.3	33.6	18.0	2.1	12.0	25.9	34.9	23.9	3.4	5.4	26.5	35.1	27.2	5.7
United Kingdom[2]*	20.5	20.0	36.9	21.8	0.7	17.4	22.1	38.6	21.0	0.9	17.5	22.1	38.5	20.9	0.9
Country mean	**16.1**	**25.1**	**33.6**	**22.7**	**2.5**	**11.7**	**23.8**	**34.3**	**27.1**	**3.1**	**8.9**	**24.3**	**35.8**	**27.0**	**4.0**
WEI participants															
Argentina	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	35.0	36.1	22.5	5.4	1.0	27.9	33.6	29.2	8.7	0.6	29.1	32.6	28.9	8.8	0.7
Chile	8.7	23.9	37.1	25.5	4.8	8.7	23.9	37.1	25.5	4.8	10.5	31.4	35.4	18.0	4.7
China	33.4	26.9	26.9	12.7	0.1	48.0	28.2	15.3	8.4	0.1	40.6	33.8	13.7	11.6	0.4
Indonesia	52.1	34.6	9.7	3.6	n	21.1	52.8	18.2	7.3	0.6	19.0	51.4	20.4	8.2	1.0
Israel	22.0	31.5	32.6	12.6	1.3	18.6	31.9	33.8	14.4	1.3	11.9	28.1	33.7	21.3	5.0
Jordan	m	m	m	m	m	42.6	39.8	14.2	3.4	x	38.8	43.1	13.6	4.6	x
Malaysia	22.9	48.9	18.0	9.8	0.4	15.5	50.8	25.0	8.5	0.2	x	x	x	x	x
Philippines	9.9	24.9	21.1	36.7	7.4	12.8	37.9	30.7	15.7	2.9	12.8	37.9	30.7	15.7	2.9
Tunisia	m	m	m	m	m	31.9	42.7	20.7	4.7	n	27.8	42.3	23.8	6.1	n

1. Includes only public institutions.
2. Includes only general programmes at upper secondary education.
* See Annex 3 for notes.

Source: OECD.

Table D2.2. **Gender distribution of teachers (1999)**

Percentage of women 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
OECD countries										
Australia	m	m	m	m	m	m	m	m	45.4	m
Austria*	98.8	88.5	63.8	48.6	55.6	45.6	49.6	42.9	25.6	62.0
Belgium (Fl.)*	99.1	73.3	x	54.8	x	x	x	41.2	13.5	63.1
Canada	67.7	67.5	67.3	66.8	66.8	a	44.7	x	m	63.7
Czech Republic	99.8	84.5	81.0	56.3	67.0	54.5	50.1	53.9	50.2	72.1
Denmark	92.0	63.0	63.1	30.3	32.5	27.8	29.8	m	m	66.9
Finland*	96.3	71.2	70.6	56.8	67.7	51.5	x	x	44.9	66.2
France	77.7	77.7	62.8	50.6	52.7	47.7	m	41.6	31.5	61.4
Germany	96.7	81.5	56.7	39.0	38.7	39.3	37.5	45.3	26.4	57.3
Hungary	100.0	85.5	85.6	58.8	68.3	54.2	x	x	37.8	75.7
Iceland*	98.2	76.6	x	43.5	x	x	x	33.5	44.7	72.9
Ireland*	92.2	84.8	55.9	x	x	x	x	33.2	33.4	61.4
Italy*	99.5	94.6	73.3	58.8	x	x	m	29.9	28.3	75.3
Korea	99.8	66.8	56.2	27.6	26.4	29.5	a	28.8	24.0	46.1
Luxembourg[1]*	97.7	60.0	37.9	x	x	x	m	m	m	54.0
Mexico	93.8	66.5	48.5	40.6	39.2	46.3	a	x	x	62.2
Netherlands*	x	71.1	x	39.9	36.6	46.5	x	m	m	m
New Zealand	98.5	81.9	61.7	53.1	54.5	50.3	49.9	51.7	39.6	66.0
Norway*	m	x	71.9	43.7	43.7	x	x	x	36.0	59.4
Slovak Republic	99.9	92.6	76.9	66.1	71.5	64.8	x	x	36.9	76.2
Spain*	92.8	68.3	x	52.3	x	x	x	49.7	33.6	58.2
Sweden*	96.7	79.9	61.9	50.0	54.0	45.7	45.2	x	36.7	65.6
Switzerland[1]*	99.4	72.4	45.0	31.7	36.5	27.7	m	m	24.6	51.3
United Kingdom	89.9	75.6	54.8	56.3	56.5	56.0	a	x	32.4	61.4
United States	94.7	86.5	60.2	50.8	50.8	a	40.7	48.7	37.0	65.8
Country mean	**94.6**	**77.0**	**62.7**	**48.9**	**51.1**	**45.8**	**43.4**	**41.7**	**34.1**	**63.8**
WEI participants										
Argentina	96.0	89.1	71.2	65.5	65.5	65.5	a	67.4	45.4	75.5
Brazil	98.3	93.7	85.7	72.9	x	x	a	x	42.0	85.2
Chile	98.1	74.1	74.1	52.7	56.3	47.1	a	m	m	70.0
China	94.4	48.9	40.5	36.2	33.3	42.5	m	m	35.5	48.4
India	m	34.3	36.1	35.2	35.2	m	a	m	m	m
Indonesia	m	53.7	44.1	38.3	41.9	32.4	a	x	27.0	46.6
Israel	m	83.6	74.7	64.8	m	m	m	m	m	75.9
Jordan	99.2	m	62.2	45.7	51.9	34.2	a	m	m	61.8
Malaysia	m	62.9	60.6	x	x	x	15.1	34.3	40.4	60.2
Peru	96.4	59.6	40.9	x	x	x	a	27.7	m	54.5
Philippines	91.8	87.4	76.3	76.3	76.3	a	m	a	m	84.3
Russian Federation	m	98.3	m	81.6	x	x	48.7	73.7	48.5	76.8
Tunisia	95.1	49.5	40.6	40.8	40.8	x	a	27.9	44.3	46.8

1. Includes only public institutions.
* See Annex 3 for notes.
Source: OECD.

D2

Table D2.3. **Percentage of women teaching staff in each age group (1999)**

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

	Primary education					Lower secondary education					Upper secondary education				
	Age group					Age group					Age group				
	< 30	30-39	40-49	50-59	> = 60	< 30	30-39	40-49	50-59	> = 60	< 30	30-39	40-49	50-59	> = 60
OECD countries															
Austria*	92.7	89.9	89.1	82.6	41.1	76.0	70.6	62.0	49.4	42.7	67.6	57.1	47.6	34.2	23.8
Belgium (Fl.)*	84.2	76.4	72.4	59.0	52.2	x	x	x	x	x	66.3	60.9	55.2	45.3	17.6
Canada	78.1	70.8	69.6	57.2	56.7	78.0	70.6	69.4	57.0	56.5	77.6	70.2	68.9	56.5	56.0
Czech Republic	83.2	86.8	85.6	84.3	72.5	80.8	83.3	82.7	81.5	67.5	61.8	61.8	58.5	50.0	30.5
Finland*	79.5	69.6	71.1	69.2	62.8	69.9	67.9	70.6	72.7	77.7	63.5	60.8	53.7	55.7	56.6
France	88.7	77.9	75.0	75.8	72.7	67.5	61.6	62.9	61.5	60.5	54.4	51.8	50.7	48.0	46.5
Germany	95.2	92.7	85.3	73.1	57.5	73.3	63.3	59.9	52.0	41.5	59.0	50.8	41.0	28.3	21.2
Iceland*	74.7	79.3	78.6	74.4	62.9	x	x	x	x	x	49.5	51.6	43.3	38.3	34.4
Ireland*	89.7	86.9	81.2	83.3	88.0	70.4	65.2	55.9	41.8	43.5	x	x	x	x	x
Italy*	97.1	97.3	95.1	91.8	86.0	82.1	77.9	75.3	71.1	59.5	35.2	67.0	59.7	51.7	40.6
Korea	83.2	80.1	58.4	38.1	19.4	82.8	65.5	44.2	16.6	5.4	63.9	33.0	17.5	7.7	3.1
Luxembourg[1]*	70.4	58.8	56.4	53.2	60.0	50.8	43.8	38.6	30.1	17.0	x	x	x	x	x
Netherlands*	86.9	80.7	67.3	60.0	64.0	x	x	x	x	x	60.9	50.3	39.6	30.8	24.9
New Zealand	86.0	82.8	82.4	78.0	82.2	70.9	61.5	60.9	57.3	55.0	63.3	54.2	53.0	52.3	53.9
Norway*	x	x	x	x	x	72.9	75.6	73.1	67.9	67.3	59.4	52.9	45.3	36.4	29.6
Slovak Republic	91.9	94.9	95.9	88.6	79.9	75.8	82.8	82.0	69.4	40.1	71.8	75.0	68.4	52.2	24.4
Sweden*	81.6	75.9	79.5	80.8	83.6	66.1	61.7	60.6	61.8	59.7	55.0	51.5	48.1	50.6	46.8
Switzerland[1]*	83.8	73.5	68.6	66.8	55.1	64.6	50.9	40.8	38.1	24.6	43.8	37.3	31.0	27.5	19.5
United Kingdom[2]*	83.0	72.5	74.6	73.2	73.1	66.5	55.2	52.4	49.7	46.9	68.0	56.9	54.1	51.4	48.6
Country mean	**85.0**	**80.4**	**77.0**	**71.6**	**65.0**	**71.8**	**66.1**	**62.0**	**54.9**	**47.8**	**60.1**	**55.5**	**49.1**	**42.2**	**34.0**
WEI participants															
Argentina	87.0	87.0	92.9	92.0	85.8	69.0	70.3	75.3	71.5	58.0	63.1	64.5	70.0	65.8	51.5
Brazil	90.0	95.6	96.6	94.7	81.5	81.7	88.7	86.7	84.8	74.3	66.6	77.9	74.5	71.3	56.3
Chile	79.5	76.4	74.2	72.9	58.9	79.5	76.4	74.2	72.9	58.9	55.5	54.1	50.9	55.1	41.9
China	60.5	50.2	42.7	29.1	9.9	46.6	38.7	34.7	21.9	11.1	44.8	33.8	30.9	20.4	11.4
Indonesia	53.7	53.7	53.7	53.7	n	44.1	44.1	44.1	44.1	44.1	38.5	38.3	38.4	37.5	36.4
Israel	85.6	83.7	84.0	81.8	63.1	82.3	74.6	73.6	69.2	60.8	77.0	66.7	65.9	60.2	40.5
Jordan	x	x	x	x	x	64.8	67.8	47.3	27.7	x	55.8	51.2	14.7	1.8	x
Malaysia	70.4	65.1	57.3	46.0	29.4	72.2	64.1	53.0	42.4	20.6	x	x	x	x	x
Philippines	88.2	88.5	89.7	85.7	84.2	74.7	74.5	78.7	77.1	75.0	74.7	74.5	78.7	77.1	74.9
Tunisia	x	x	x	x	x	56.0	48.3	40.0	29.7	n	50.0	39.0	35.8	31.5	11.1

1. Includes only public institutions.
2. Includes only general programmes at upper secondary education.
* See Annex 3 for notes.
Source: OECD.

Table D2.4. **Teaching staff and the labour force (1999)**

Teaching staff as a percentage of the total labour force, by level of education, based on head counts

	Classroom teachers as a percentage of total labour force			Percentage of teaching/research assistants among instructional personnel in tertiary education	Percentage of part-time teachers, all levels of education	Student enrolment as a percentage of the total labour force
	Primary and secondary education	Tertiary education	All levels of education			
Australia[1]	2.3	0.5	2.8	m	m	59.5
Austria*	2.6	0.7	3.8	15.3	23.9	43.2
Belgium (Fl.)*	3.6	0.5	4.7	15.3	32.0	54.6
Canada*	1.7	0.8	2.7	m	23.3	44.8
Czech Republic	2.1	0.4	2.9	m	m	41.9
Denmark	2.8	m	m	m	22.9	43.4
Finland*	2.4	0.6	3.4	11.4	6.0	48.9
France	2.7	0.5	3.7	m	11.1	55.5
Germany*	1.9	0.7	3.1	m	42.5	42.3
Greece	m	m	m	m	19.2	m
Hungary	3.6	0.5	4.9	m	11.0	55.1
Iceland*	3.3	0.9	6.0	m	42.8	55.2
Ireland*	2.8	0.6	3.5	m	17.2	59.3
Italy*	2.9	0.3	3.7	m	n	45.6
Japan	1.5	0.7	2.4	m	25.0	35.2
Korea*	1.4	0.6	2.2	12.5	17.4	53.1
Luxembourg	2.9	m	3.3	m	7.3	44.2
Mexico	2.5	0.5	3.4	6.3	33.8	74.4
Netherlands	2.8	m	m	m	m	44.5
New Zealand	2.6	0.6	3.6	23.8	25.1	57.6
Norway	3.7	0.6	4.3	m	30.8	48.0
Poland	m	m	m	m	m	58.3
Portugal	m	m	m	m	m	44.4
Spain	2.7	0.7	3.8	m	13.7	54.6
Sweden*	2.8	0.7	3.5	m	23.3	54.9
Switzerland*	2.3	0.7	3.2	11.9	54.1	35.5
Turkey*	2.0	0.3	2.3	28.4	m	59.5
United Kingdom	2.4	0.3	3.0	m	26.8	54.8
United States	2.2	0.7	3.3	18.4	17.1	50.2
Country mean	**2.6**	**0.6**	**3.5**	**15.9**	**22.8**	**50.3**

1. The number of teachers is expressed in full-time equivalents.
* See Annex 3 for notes.

Source: OECD.

D2

Table D2.5. **Teaching staff and non-teaching staff (1999)**

Teaching staff and non-teaching staff as a percentage of the total labour force for all levels of education, based on head counts

	Instructional personnel		Professional support for students	Management/quality control/ administration		Maintenance and operations personnel	Total teaching and non-teaching staff
	Classroom teachers, academic staff and other teachers	Teacher aides and teaching research assistants		School and higher level management	School and higher level administrative personnel		
Australia[1]	2.8	m	0.2	m	0.2	0.2	m
Austria*	3.8	0.3	m	x	m	m	m
Belgium (Fl.)*	4.7	0.1	0.4	0.1	0.2	0.2	5.7
Canada*	2.7	n	0.1	0.2	0.2	m	3.2
Czech Republic[2]	2.9	n	0.3	0.5	0.9	0.8	5.4
Finland*	3.4	0.9	0.3	0.1	1.0	1.0	6.7
France	3.7	m	1.0	0.4	0.3	0.6	6.0
Germany*	3.1	m	m	m	m	m	m
Hungary	4.9	m	x	x	0.8	1.4	7.1
Iceland*	6.0	x	0.3	0.6	0.3	1.6	8.7
Ireland*	3.5	x	m	0.1	0.3	0.1	3.9
Italy*	3.7	0.1	0.2	0.1	0.5	0.5	5.0
Japan	2.4	m	0.2	0.2	0.3	0.2	3.2
Korea*	2.2	0.1	n	0.1	0.2	0.3	2.9
Luxembourg	3.3	m	m	m	m	m	m
Mexico	3.4	0.1	0.1	0.9	1.3	0.3	6.1
Netherlands[1]	2.7	m	m	0.2	m	m	m
New Zealand	3.6	0.2	0.1	0.2	0.6	0.2	4.8
Norway	4.3	m	m	0.4	m	m	m
Spain	3.8	m	m	m	m	m	m
Sweden*	3.5	0.4	m	0.2	m	m	m
Switzerland*	3.2	0.1	n	m	0.3	m	m
Turkey*	2.3	0.1	m	m	m	m	m
United Kingdom	3.0	m	m	m	m	m	m
United States[2]	3.3	0.5	0.5	0.3	0.7	1.0	6.4
Country mean	**3.5**	**0.3**	**0.3**	**0.3**	**0.5**	**0.6**	**5.4**

1. The figures for teaching and non-teaching staff are expressed in full-time equivalents.
2. The figures for teaching and non-teaching staff are expressed in full-time equivalents except for the column "Classroom teachers, academic staff and other teachers".

* See Annex 3 for notes.

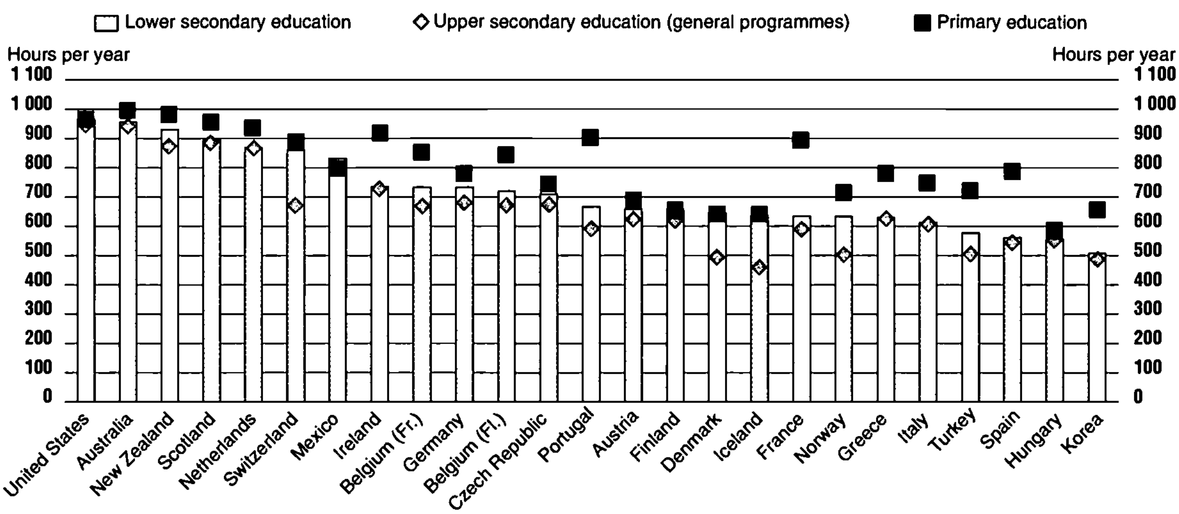
Source: OECD.

TEACHING TIME AND TEACHERS' WORKING TIME

- In primary education, the average number of teaching hours per year is 801, in lower secondary education 716 hours, and in general upper secondary education 662 hours.
- The number of teaching hours per year in public primary schools ranges from fewer than 600 hours in Hungary to more than 950 hours in Australia, New Zealand and the United States.
- At the upper secondary level, teaching hours in vocational education are nearly always equal to or higher than those in general education.
- The amount and allocation of non-teaching time varies widely between countries.

Chart D3.1. **Number of teaching hours per year**

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



Countries are ranked in descending order of the number of teaching hours in lower secondary education.
Source: OECD. Table D3.1.

D3

POLICY CONTEXT

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

Together with factors such as the ratio of students to teaching staff (indicator D5), students' hours of instruction (indicator D4) and teachers' salaries (indicator D1), the amount of time that teachers spend teaching influences the financial resources that are devoted to education. At the same time, teaching time is an important element of teachers' working conditions and is also related to the attractiveness of the teaching profession.

Although teachers may spend many working hours not teaching, the concept of teachers' working time varies widely between countries. While formal working hours refer in some countries only to the time associated with teaching, teachers are also required in most countries to spend time on non-teaching activities.

EVIDENCE AND EXPLANATIONS

The number of teaching hours per year in public primary schools ranges from fewer than 600 hours in Hungary to 950 hours or more in Australia, New Zealand, Scotland and the United States.

In primary education the number of teaching hours per year varies from 583 in Hungary to 915 or more in Australia, Ireland, the Netherlands, New Zealand, Scotland and the United States. In lower secondary education, teaching hours range from 507 in Korea to 964 in the United States. Teaching hours vary between 464 hours in Iceland and 943 hours in the United States in general upper secondary programmes, and between 464 in Iceland and 1 008 in Belgium (French Community) in upper secondary vocational education (Table D3.1).

In primary education, the average number of teaching hours is 801, in lower secondary education 716 hours, and in general upper secondary education 662 hours.

In most countries, the number of teaching hours is higher in primary education than in lower and upper secondary education, but the differentials vary widely between countries. While in France and Portugal a primary teacher is required to teach more than 300 hours longer than an upper secondary teacher (general programmes), in Australia, Austria, the Czech Republic, Germany, Finland, Hungary, the Netherlands, Scotland and the United States this difference is less than 100 hours (Chart D3.1).

In Belgium, France, Germany, Korea, Norway, Switzerland and Turkey, teaching hours in vocational upper secondary education are higher than in general upper secondary education. In Turkey, teachers in vocational upper secondary education may spend close to twice as much time teaching as teachers in general upper secondary education (*i.e.* 960 hours in vocational education versus 504 hours in general education) (Table D3.1).

Teaching hours per week in upper secondary vocational programmes in the Flemish Community of Belgium

In the Flemish Community, the relatively high number of teaching hours per week in vocational programmes is explained by the number of hours required of teachers of practical subjects, which is higher than that of teachers of artistic and technical subjects. The maximum teaching time for teachers of technical and artistic subjects in vocational or technical secondary education is 19.2 hours per week in the second stage and 18.3 hours in the third stage; whereas the maximum teaching time for teachers of practical subjects in vocational or technical secondary education is 27.5 hours in both the second and the third stage.

In Australia, Austria, the Czech Republic, Denmark, England, Germany, Greece, Hungary, Iceland, Ireland, Korea, Mexico, the Netherlands, Norway, Portugal, Scotland, Spain and Sweden, full-time teachers are formally required to work a specific number of hours per week in order to earn their full-time salary. These hours include both teaching time and non-teaching time (but note that some countries only stipulate hours of work in school whereas others include out-of-school hours also).

In about half of OECD countries, teachers are formally required to work a specific number of hours per week, at home or at school, in order to earn their full-time salary...

At the secondary level, the number of specified formal working hours per week is lowest in England, Portugal and Scotland (35 hours or less) and highest in Iceland, Korea and Norway (44 hours or more). In Denmark, Greece, the Netherlands and Spain, all pre-primary, primary and secondary teachers are required to work around 37 hours per week, while in Austria, the Czech Republic, Hungary, Iceland and Sweden these teachers have to work over 40 hours per week (Table D3.2).

In Australia, England, Greece, Ireland, Scotland and Spain, teachers are required to be available at school for a specified number of hours per week or per day. In Australia and Scotland, it is further specified how much of the working time at school should be allocated to teaching, and how much to other activities. In Spain working time consists of teaching time, non-teaching time to be spent at school, and non-teaching time that the teacher is free to spend out of school (Table D3.2).

... in some of these countries teachers are required to spend a specified amount of time at school, which includes teaching and non-teaching activities.

Time spent by teachers at school in Ireland

Primary teachers are required to be in attendance at school for a specific period of time each day, which is spent on teaching duties and supervision duties. Secondary school teachers are required to be in attendance at school for a period of 22 hours each week for teaching duties unless they hold posts of special responsibility.

In England and Sweden, overall working time is specified at the national level. Teaching time is allocated at the local or school level. In New Zealand, teachers' working time is defined at the school level, while in the United States teachers' working time is defined at the local level. In some OECD countries, only the teacher's teaching (contact) time is prescribed (Austria and Germany).

In England and Sweden, working time is specified at the national level.

Non-teaching time in England

In England, classroom teachers have to be available for work for 1 265 hours over 195 days in any year, which is equal to 32.5 hours per week. This time covers teaching, in-service training and various other duties. In England, there are no rules concerning the minimum period of non-contact time.

Local decision-making for teachers' working hours in New Zealand

In New Zealand, formal policy on working time relates to the hours during which schools are required to "be open for instruction". In primary education, schools are required to be open for 394 half-days, and in upper secondary education for only 380 half-days. Of this time, at least two hours must be in the morning and at least two hours in the afternoon. In New Zealand, lower secondary education covers schools also providing both primary and upper secondary education. Currently, the Board of Trustees can apply to close a school for local events such as teachers-only days and staff in-service training days. However, this can be for no more than five days per year, and these days cannot be counted as days on which the school is "open for instruction". The school may need to stay open longer at the end of the year to complete the correct number of half-days.

In Belgium (French Community), Finland, France, Ireland, Portugal and Turkey, teachers are formally required to be at school only during the hours when they are scheduled to teach.

In Belgium (French Community), Finland, France, Ireland, Portugal and Turkey, teachers are formally required to be at school only during the hours when they are scheduled to teach. Their teaching hours, however, are calculated on the assumption that together with preparation for lessons, examinations, marking of papers and other school-related activities, they make up the working time generally required of public employees. In France, in pre-primary and primary education, of the 26 teaching hours per week teachers are required to spend one hour per week meeting other teachers and co-ordinating teaching.

In Denmark, Iceland and the Netherlands, time is allocated for examinations and professional development.

In Denmark, Iceland and the Netherlands, time is allocated for various non-teaching activities. Allowance is explicitly made for preparation and professional development in Denmark and the Netherlands, for examinations in Denmark and Iceland, and for professional development in Denmark and the Netherlands.

Non-teaching time in Denmark

In Denmark, teachers in primary and lower secondary education are entitled to one hour for preparation and on average half an hour for non-teaching activities per teaching hour. In upper secondary general education, part of this time for preparation is defined by a collective agreement, the remaining part being allocated at the school level.

In a number of countries, teachers are required to work more days or weeks than there are teaching weeks.

In Italy, Portugal and Spain, teachers teach for around 35 weeks while working time consists of up to 40 weeks or more per year and includes preparation of lessons, planning, in-service training, school meetings, assessment, extra-curricular activities and final examinations.

In England, Norway and Turkey, teachers are required to work five days, one week and 80 hours respectively in addition to the school year. In Iceland, the school year for primary and lower secondary education is nine months. During this period, students attend school for 170 days, and teachers for 175 days. Teachers also attend school for six days before or after the school year.

DEFINITIONS AND METHODOLOGIES

Teaching time

The number of teaching hours is defined as the net contact hours of teaching. It is calculated on the basis of the annual number of weeks of instruction multiplied by the minimum/maximum number of periods which 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. Periods of time formally allowed for breaks between lessons or groups of lessons, and days when schools are closed for public holidays and festivities, are excluded.

***Data are from the* 2000 OECD-INES *survey on Teachers and the* Curriculum *and refer to the school year* 1998/1999.**

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 of students, correction of assignments and tests, professional development, meetings with parents, staff meetings and general school tasks.

Working time does not include paid overtime.

Refer to Annex 3 for a discussion of coverage, interpretations, methodology, organisation and national sources for data on teaching time and working time.

Table D3.1. **Number of teaching hours per year**

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

	Primary education	Lower secondary education	Upper secondary education, general programmes	Upper secondary education, vocational programmes
OECD countries				
Australia*	996	955	941	m
Austria*	684	658	623	623
Belgium (Fl.)*	840	720	675	833
Belgium (Fr.)*	854	733	671	1 008
Czech Republic	739	709	680	680
Denmark*	644	644	500	a
Finland	656	656	627	m
France	892	634	589	653
Germany*	783	733	685	695
Greece*	780	629	629	629
Hungary	583	555	555	555
Iceland*	636	636	464	464
Ireland	915	735	735	a
Italy	748	612	612	612
Korea	658	507	492	502
Mexico*	800	832	m	m
Netherlands*	930	868	868	843
New Zealand*	985	930	874	a
Norway*	713	633	505	589
Portugal*	900	666	594	594
Scotland*	950	893	893	a
Spain*	788	561	548	548
Switzerland*	884	859	674	727
Turkey*	720	576	504	960
United States*	958	964	943	943
Country mean	**801**	**716**	**662**	**692**
WEI participants				
Argentina	810	900	900	1 044
Brazil	800	800	800	800
Chile	860	860	860	860
Indonesia	1 260	738	738	738
Jordan	745	745	745	688
Malaysia	762	778	778	813
Paraguay	696	774	870	922
Peru	752	648	648	648
Philippines	1 176	1 176	1 176	a
Russian Federation	686	686	686	a
Sri Lanka	1 260	1 260	1 260	m
Thailand	760	652	652	615
Tunisia	735	548	548	a
Uruguay	732	712	712	712
Zimbabwe	975	936	936	936

* See Annex 3 for notes.

Source: OECD. See Annex 3 for sources.

Table D3.2. **How working time is organised**

Number of hours worked per week by teachers, by level of education and category of working time

1*a*. Full-time teachers work a specified number of hours per week to earn their full-time salary, where working time is allocated for both teaching and non-teaching activities completed ***at school or outside school***.

	Pre-primary education	Primary education	Lower secondary education	Upper secondary education, general programmes	Upper secondary education, vocational programmes
Australia*	m	36.3	36.3	36.3	m
Austria*	40.0	40.0	40.0	40.0	40.0
Czech Republic	42.5	42.5	42.5	42.5	42.5
Denmark*	37.0	37.0	37.0	37.0	a
England*	32.5	32.5	32.5	32.5	32.5
Germany*	38.5-40.0	38.5-40.0	38.5-40.0	38.5-40.0	38.5-40.0
Greece*	37.5	37.5	37.5	37.5	37.5
Hungary*	40.0	40.0	40.0	40.0	40.0
Iceland*	40.0	45.8	45.8	44.7	44.7
Ireland*	m	m	a	a	a
Korea	a	44.0	44.0	44.0	44.0
Mexico*	20.0	25.0	25.0	m	m
Netherlands*	36.9	36.9	36.9	36.9	38.0
Norway*	a	44.0	44.0	44.0	44.0
Portugal*	35.0	35.0	35.0	35.0	35.0
Scotland*	a	27.5	27.5	27.5	a
Spain*	37.5	37.5	37.5	37.5	37.5
Sweden*	40.0	40.0	40.0	40.0	40.0

1*b*. Both teaching and non-teaching activities are completed ***at school only***.

	Pre-primary education	Primary education	Lower secondary education	Upper secondary education, general programmes	Upper secondary education, vocational programmes
Australia*	m	34.7	34.9	34.9	m
England*	32.5	32.5	32.5	32.5	32.5
Greece*	37.5	37.5	37.5	37.5	37.5
Ireland*	23.4	28.4	a	a	a
Scotland*	a	27.5	27.5	27.5	a
Spain*	30.0	30.0	30.0	30.0	30.0

2. Full-time teachers are only required to be at school for a specified number of teaching hours. There is no requirement for how much time must be spent on non-instructional activities.

	Pre-primary education	Primary education	Lower secondary education	Upper secondary education, general programmes	Upper secondary education, vocational programmes
Belgium (Fr.)	23.3	23.3	20.0	18.3	27.5
Finland	17.3	17.3	17.3	16.5	m
France*	27.0	27.0	15-20	15-20	18-23
Ireland*	a	a	22.0	22.0	a
Portugal	25.0	25.0	18.3	18.3	16.7
Turkey*	25.0	20.0	16.0	14.0	26.7

3. Teachers' working hours are set at the local or school level. It is possible to calculate an average across these decision-making units.

	Pre-primary education	Primary education	Lower secondary education	Upper secondary education, general programmes	Upper secondary education, vocational programmes
New Zealand*	22.5	25.0	25.0	23.0	a
United States*	a	33.2	33.2	33.2	33.2

* See Annex 3 for notes.

Source: OECD. See Annex 3 for sources.

D3

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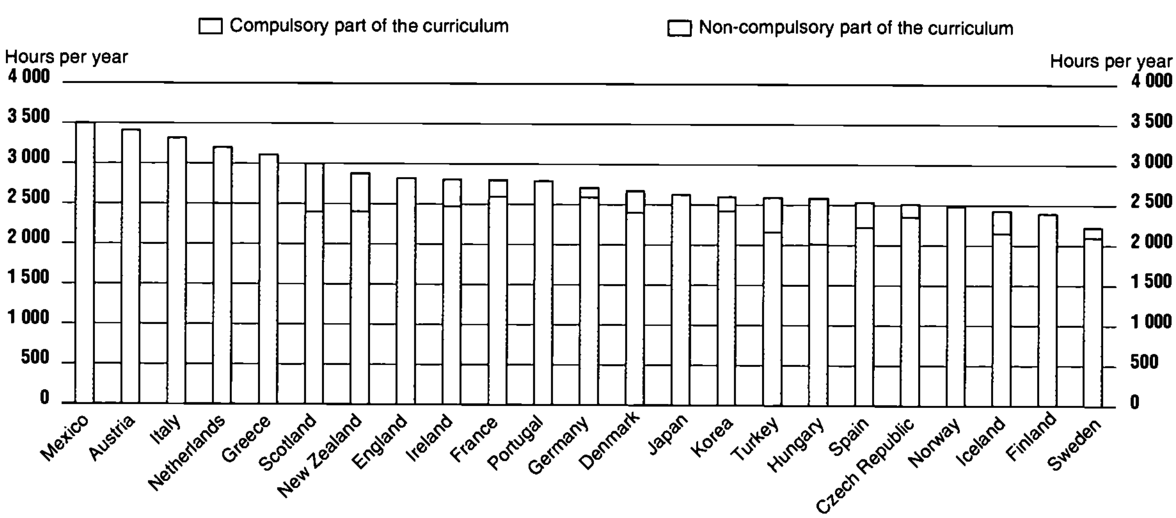
TOTAL INTENDED INSTRUCTION TIME FOR STUDENTS IN LOWER SECONDARY EDUCATION

- Total intended instruction time for students aged 12 to 14 years inclusive, aggregated over three years, ranges from less than 2 500 hours in Finland, Iceland, Norway and Sweden to 3 500 hours in Mexico.
- In OECD countries, reading and writing in the mother tongue, mathematics, and science comprise on average 39 per cent of the total intended instruction time.
- Intended instruction time in mathematics and science over three years ranges from 467 hours in Iceland to 1 167 hours in Mexico.
- In Australia, Belgium (Flemish Community), Hungary, the Netherlands and Scotland, 20 per cent or more of the time allotted to different sections of the curriculum is regarded as non-compulsory.

Chart D4.1. **Intended instruction time (1999)**

Total intended instruction time in hours per year for students 12 to 14 years of age, divided into compulsory and non-compulsory parts of the curriculum



Countries are ranked in descending order of the total intended instruction time between the ages of 12 and 14.
Source: OECD. Tables D4.1*a*, D4.2.

POLICY CONTEXT

Instruction time is the main resource invested in education. Policy-makers aiming to improve educational outcomes often seek to increase or to make more effective use of the amount of time for which students are engaged in learning activities. However, tight budgets may restrict the improvements that can be achieved.

This indicator shows the total number of intended hours of instruction for all three grades in which the majority of pupils are 12, 13 and 14 years of age.

The instruction time that can be devoted to each student is closely related to factors such as class size, teaching time (indicator D3) and ratio of students to teaching staff (indicator D5). The optimal balance between these factors may vary in different subject areas and at different levels of education.

EVIDENCE AND EXPLANATIONS

The indicator compares intended instruction time for students, which comprises compulsory time (*i.e.*, for core subjects that all students must take) and non-compulsory time (*i.e.*, when there is a choice of subject matter). The total, aggregate, number of intended hours of instruction for all three grades in which the majority of pupils are 12, 13 and 14 years of age is shown, as well as the time devoted to major subject areas. The indicator also reviews the organisation of instruction time for 14-year-old students: the degree to which the "prescribed curriculum" applies to all streams in which they can be enrolled, and the breakdown of instruction hours over the school year.

Total intended instruction time for pupils aged 12 to 14 years inclusive, aggregated over three years, ranges from less than 2 500 hours in Finland, Iceland, Norway and Sweden to 3 500 hours in Mexico.

Intended instruction time refers to the number of hours during which pupils aged 12, 13 and 14 years are taught according to the prescribed or advised curriculum over three years in both the compulsory and non-compulsory parts of the curriculum. In many cases, the actual amount of time that students spend being taught does not fully correspond to the intended instruction time. Time may be lost because of a lack of qualified substitutes for absent teachers, or because of students' own absences. School closures for examinations, teachers' meetings or inclement weather may also reduce actual instruction time. Furthermore, intended instruction time can also vary from year to year and from school to school. Changes to the curriculum or to the required number of teaching hours, and variations in the length of holidays all directly increase or reduce intended instruction time. In some countries, there are differences between regions or between different types of schools. In a number of countries, local education authorities or schools have some discretion in deciding on the number and breakdown of hours of instruction (see indicator D6 in *Education at a Glance* 2000).

Total intended instruction time for pupils aged 12 to 14 years inclusive, aggregated over three years, ranges from less than 2 500 hours in Finland, Iceland, Norway and Sweden to 3 500 hours in Mexico. The total is also comparatively high in Austria and Italy (3 407 and 3 315 hours respectively). The mean is 2 781 hours.

Across OECD countries, reading and writing in the mother tongue, mathematics and science account for 39 per cent of total intended instruction time.

On average across OECD countries, 39 per cent of instruction time is devoted to three basic subject areas: reading and writing in the mother tongue (15 per cent), mathematics (13 per cent) and science (11 per cent). The next highest percentages of instruction time are devoted to modern foreign languages (11 per cent) and social studies (12 per cent). The smallest percentages of instruction time are devoted to vocational skills (1 per cent), religion (3 per cent) and technology (5 per cent). Arts and physical education receive 8 per cent each, and other subjects 5 per cent. Finally, an average of 9 per cent of instruction time is regarded as non-compulsory (Table D4.2).

These averages hide considerable variation. In Ireland and Italy respectively, 24 and 23 per cent of intended instruction time is devoted to reading and writing in the mother tongue, whereas in Austria and the Netherlands the instruction time devoted to this subject is 11 per cent or less. In Ireland, however, reading and writing in the mother tongue is taken to comprise the teaching of both Irish and English. In England, Germany and Norway, 16 per cent of instruction time is allocated to modern foreign languages, while in Australia, Scotland and the United States, this figure is below 8 per cent.

In Mexico, 19 per cent of instruction time is devoted to science, while in Belgium (both the Flemish and the French Community) the instruction time devoted to science is only 6 per cent or less. The mean instruction time for science in OECD countries is 11 per cent. There is less variation between countries in the proportion of instruction time devoted to mathematics. In most countries, this proportion is around 13 per cent, close to the average, with the exception of Greece, Italy, the Netherlands and Turkey (11 per cent or less), and New Zealand and the United States (both 16 per cent).

Intended instruction time in mathematics and science over three years ranges from 467 hours in Iceland to 1 167 hours in Mexico.

In the Czech Republic, Ireland, Mexico and Portugal, social studies receives a comparatively large proportion of total instruction time (17 per cent or more), while in Iceland social studies is only allocated 7 per cent of total instruction time. In England, 13 per cent of instruction time is devoted to technology, which is well above the OECD average of 5 per cent (Table D4.2). Among OECD countries, intended instruction time in mathematics and science over three years ranges from 467 hours in Iceland to 1 167 hours in Mexico. The mean intended instruction time over three years is 665 hours (Table D4.1*b*).

In seven countries, over 15 per cent of total intended instruction time is regarded as non-compulsory.

In Australia, Belgium (Flemish and French Communities), Hungary, the Netherlands, New Zealand, Scotland and Turkey, over 15 per cent of total intended instruction time is regarded as non-compulsory (Table D4.2).

In Austria, England, Finland, Greece, Italy, Japan, Mexico, Norway, Portugal and the United States, the time allocated to the different sections of the curriculum in lower secondary education is to a large extent compulsory. In many countries, however, there can still be some flexibility: students may, for example, still have choices within compulsory subject areas (Table D4.2).

In 23 out of 25 countries, there is a national curriculum document specifying the amount of time to be allocated to the various subject areas (see Annex 3 for sources). The degree of flexibility allowed for schools, teachers and students to specify content, choose textbooks and further determine their timetables varies from country to country. In most countries, decisions on the curriculum are made in consultation between national, regional and local authorities, and schools.

In most countries, national curriculum documents provide a framework for the allocation of instruction time to the various subjects.

Key learning areas in the Australian curriculum

In Australia, most States and Territories have a prescribed curriculum. This is generally designed around "eight key learning areas" – arts, English, health and physical education, languages other than English, mathematics, science, social and environmental studies, and technology. In some States, however, schools have scope to define the details of subject areas, and thereby to implement the curriculum to suit the needs of individual schools and students.

Defining the core curriculum in the Flemish Community of Belgium

In Belgium (Flemish Community), the government prescribes the subjects of the core curriculum for the various years of secondary education. The government also specifies the minimum periods per week for the core curriculum in lower secondary education. However, the intended instruction time per subject is not defined. Each organising body is thus free to determine not only the rest of the subjects offered (besides the core curriculum), but also the time devoted to each subject (taking into account the minimum number of periods per week for the core curriculum).

Hours of instruction in Finland

In Finland, national regulations define the minimum number of hours of instruction at the lower and upper stages of comprehensive school. Within these limits, schools decide themselves how to distribute the subjects during the six years at the lower stage and three years at the upper stage.

Prescribed curriculum in Germany

In Germany, the prescribed curriculum varies between the Länder and types of school. In addition, some curricula allow schools to decide how many lessons per week to devote to certain subjects.

National Core Curriculum (NCC) in Hungary

In 1995, the Hungarian Parliament adopted the new National Core Curriculum (NCC), which introduced a new system of educational content regulation. This new system changed the centralised system of content regulation into a two-level system. Besides the National Core Curriculum, which sets out the basic principles, the main knowledge areas (subjects are organised into knowledge areas) and the common requirements up to the end of grade 10, schools have to develop their own local curricula. The National Core Curriculum was introduced from the school year 1998/1999 in grades 1 to 7.

Curriculum legislation in New Zealand

Curriculum legislation was amended at the end of 1998 (under the Education Legislation Amendment Act, 1998) to allow for more precision in the prescribed curriculum (*e.g.* Maori-medium documents applying only to Maori-medium schools and classes), and to allow publication of a general policy statement on curriculum and assessment. In July 1999, the status of each of the seven national curriculum statements were as follows: Mathematics, Science, English and Technology were published; Social Studies and Health and Physical Education were finalised but not published; and Arts was not yet finalised.

Autonomous Communities in Spain

In Spain, the government of each Autonomous Community states the curriculum for that Community. This must necessarily include the compulsory curriculum prescribed by the central government, which is the 55% of the school time for those Communities with a second official language and the 65% for the rest. The main differences between the Communities relate to the mother tongue. In those with their own language, twice as much time is devoted to the mother tongue (half for Spanish and half for the Community language).

Prescribing curriculum in Sweden

In Sweden, the curriculum prescribed by the government or the education system states only the total hours per subject or group of subjects for the nine years of compulsory schooling. It is up to the municipalities and schools themselves to decide in which year a given subject should be introduced, and how many hours are needed in any academic year.

Curriculum in the United Kingdom

In England, the National Curriculum specifies what is taught, through development and consultation. Guidelines exist for the percentage of time allocated to each subject, but these are not statutory. In Scotland, the curriculum is not prescribed by statute, although schools have a framework for five to 14-year-olds. The guidelines give recommended time allocations for each subject area in order to ensure breadth, balance and continuity in the curriculum and progression for all pupils.

DEFINITIONS AND METHODOLOGIES

Data on instruction time are from the 2000 OECD-INES survey on Teachers and the Curriculum and refer to the school year 1998/1999.

Total intended instruction time refers to the number of hours per year for which pupils receive instruction in both the compulsory and non-compulsory parts of the curriculum. Compulsory or core subjects or study areas are to be taught by each school and to be studied by each student. The non-compulsory part of the curriculum is that which is not taught in every school, *i.e.*, defined at the school level. The compulsory part of the curriculum may itself include choices within a study area (such as streams within a subject, a choice of foreign language, or a choice between art and music). Annex 3 gives more information on instruction time and curriculum in each country.

The total number of intended hours of instruction per year was calculated by multiplying the total number of classroom sessions per year by the duration of one session.

The prescribed curriculum is the subject content defined at the state, territory or government level.

The prescribed curriculum is the subject content defined at the state, territory or government level. The prescribed curriculum may be embodied in curriculum guides, in the content of examinations, or in policies, regulations or other official statements. Data for England and the United States, however, are based on sample survey data and reflect the curriculum as implemented rather than as prescribed.

The classification of subject areas, sources for national curriculum documents and notes for this indicator on coverage, interpretation and methodology are provided in Annex 3.

The organisation of instruction time at ISCED 2 for 14-year-olds refers to the formal number of class hours (1 hour = 60 minutes) per year for instructional activities for students at ISCED 2. The reference year is the school year 1998/1999. If a country has no formal policy, the number of hours is estimated from survey data.

Instruction time does not include non-compulsory time outside the school day. It does not include homework, private tutoring or private study, *e.g.*, in extra subjects taken before or after school.

Hours lost when schools are closed for public holidays and festivities, such as national holidays, are excluded.

Table D4.1a. **Intended instruction time (1999)**

Total intended instruction time in hours per year for students 12 to 14 years of age

	Ages			Total
	12	13	14	
OECD countries				
Australia*	a	1 013	1 017	m
Austria	1 002	1 156	1 249	3 407
Belgium (Fl.)*	a	960	960	m
Belgium (Fr.)	1 048	1 048	m	m
Czech Republic*	798	827	887	2 512
Denmark	840	900	930	2 670
England*	940	940	940	2 820
Finland*	684	855	855	2 394
France	841	979	979	2 799
Germany*	864	921	921	2 706
Greece	1 036	1 036	1 036	3 108
Hungary*	780	902	902	2 584
Iceland	793	817	817	2 427
Ireland*	935	935	935	2 806
Italy*	1 105	1 105	1 105	3 315
Japan	875	875	875	2 625
Korea	867	867	867	2 601
Mexico	1 167	1 167	1 167	3 500
Netherlands	1 067	1 067	1 067	3 200
New Zealand*	903	988	988	2 879
Norway	770	855	855	2 480
Portugal*	930	930	930	2 790
Scotland*	1 000	1 000	1 000	3 000
Spain*	794	870	870	2 534
Sweden*	741	741	741	2 222
Turkey	864	864	864	2 592
United States	m	m	980	m
Country mean	**902**	**947**	**951**	**2 781**
WEI participants[1]				
Argentina	816	936	936	2 688
Brazil	800	800	800	2 400
Chile	990	990	1 020	3 000
Egypt	972	1 026	1 026	3 024
Indonesia	1 231	1 231	1 231	3 692
Jordan	944	974	974	2 892
Malaysia	1 189	1 189	1 189	3 567
Paraguay	912	912	912	2 736
Peru	903	903	903	2 709
Philippines	1 467	1 467	1 467	4 400
Russian Federation	864	1 143	945	2 952
Thailand	1 167	1 167	1 167	3 500
Tunisia	840	900	900	2 640
Uruguay	1 295	1 295	1 517	4 107
Zimbabwe	753	1 289	1 289	3 331

1. Year of reference 1998 for all WEI countries.
* See Annex 3 for notes.
Source: OECD.

Table D4.1*b*. **Instruction time for mathematics and science (1999)**

Total instruction time for mathematics and science in hours per year for students 12 to 14 years of age

	Ages			Total
	12	13	14	
OECD countries				
Australia*	a	232	232	m
Austria	247	278	370	894
Belgium (Fl.)*	a	180	150	m
Belgium (Fr.)	185	216	a	m
Czech Republic*	207	207	266	680
Denmark	210	240	240	690
England*	226	228	235	688
Finland*	177	171	171	519
France	223	257	257	737
Germany*	209	206	222	637
Greece	178	207	266	651
Hungary*	194	194	222	611
Iceland	140	163	163	467
Ireland*	200	200	200	601
Italy*	221	221	221	663
Japan	175	204	233	613
Korea	204	204	204	612
Mexico	367	433	367	1 167
Netherlands	200	200	200	600
New Zealand*	293	240	320	853
Norway	171	200	171	542
Portugal*	240	330	210	780
Scotland*	233	200	200	633
Spain*	207	180	186	573
Sweden*	189	189	189	567
Turkey	171	171	171	514
United States	m	m	295	m
Country mean	**211**	**221**	**229**	**665**
WEI participants[1]				
Argentina	240	240	240	720
Egypt	243	257	257	756
Indonesia	410	352	352	1 114
Jordan	250	258	278	786
Malaysia	273	273	273	820
Paraguay	240	264	264	768
Peru	232	232	258	722
Philippines	267	267	267	800
Russian Federation	243	297	297	837
Thailand	200	200	m	400
Tunisia	165	165	165	495
Uruguay	407	407	481	1 295
Zimbabwe	232	290	290	812

1. Year of reference 1998 for all WEI countries.
* See Annex 3 for notes.
Source: OECD.

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Table D4.2. **Intended instruction time per subject (1999)**

Intended instruction time as a percentage of total intended instruction time for students 12 to 14 years of age, by subject[1], and the division of instruction time into compulsory and non-compulsory parts of the curriculum

	Reading and writing in the mother tongue	Mathematics	Science	Social studies	Modern foreign languages	Technology	Arts	Physical education	Religion	Vocational skills	Other	Percentage compulsory curriculum	Percentage non-compulsory curriculum
OECD countries													
Australia•	12	12	11	11	6	9	8	9	n	n	1	80	20
Austria•	11	14	13	11	9	5	11	10	5	2	9	100	n
Belgium (Fl.)•	14	13	5	9	14	6	6	6	6	n	n	80	20
Belgium (Fr.)•	15	13	6	12	12	3	3	9	6	n	4	82	18
Czech Republic•	14	14	13	18	11	n	9	7	n	4	5	94	6
Denmark•	20	13	12	11	10	n	9	7	3	n	3	90	10
England•	12	12	12	14	16	13	5	8	5	n	2	100	n
Finland•	20	12	10	10	9	4	8	8	4	n	16	100	n
France•	17	14	12	12	11	7	7	11	n	n	1	93	7
Germany•	14	13	10	12	16	4	10	10	5	1	2	96	4
Greece•	12	11	10	10	15	5	6	8	6	1	16	100	n
Hungary•	12	12	12	10	9	2	7	6	n	4	4	78	22
Iceland•	15	12	8	7	15	n	14	9	3	6	n	88	12
Ireland•	24	12	10	19	10	n	n	5	7	n	2	88	12
Italy•	23	10	10	14	11	9	13	7	3	n	n	100	n
Japan•	14	12	11	12	13	8	11	10	n	n	8	100	n
Korea•	14	12	12	11	12	5	10	9	n	4	6	93	7
Mexico•	14	14	19	18	9	9	6	6	n	3	3	100	n
Netherlands•	10	10	8	11	14	5	7	9	n	n	3	78	22
New Zealand•	17	16	14	14	n	8	4	11	n	n	n	84	16
Norway•	16	13	9	11	16	n	8	10	7	n	10	100	n
Portugal•	13	13	15	17	10	n	10	10	3	n	10	100	n
Scotland•	12	12	9	9	7	9	9	6	7	n	n	80	20
Spain•	18	13	10	10	11	5	12	8	x	n	n	88	12
Sweden•	22	14	12	13	12	x	3	8	x	n	10	94	6
Turkey	14	11	8	11	11	8	5	2	5	5	n	83	17
United States•	17	16	14	12	7	3	7	12	1	5	7	100	n
Country mean	**15**	**13**	**11**	**12**	**11**	**5**	**8**	**8**	**3**	**1**	**5**	**92**	**8**
WEI participants[2]													
Argentina	13	13	13	15	8	8	8	8	a	a	5	93	7
India	25	14	11	8	14	a	6	6	6	3	8	100	m
Indonesia	16	16	14	13	6	a	5	5	5	15	5	100	a
Jordan	20	13	15	9	16	4	3	4	9	6	3	100	a
Malaysia	14	11	11	14	11	5	5	5	9	5	n	90	10
Paraguay	21	13	15	14	x	13	11	5	x	x	8	100	a
Peru	14	14	12	23	6	a	6	6	6	7	n	93	7
Philippines	9	9	9	9	9	18	6	3	a	n	9	82	18
Russian Federation	24	14	15	14	x	6	4	5	a	m	n	81	n
Thailand	11	6	9	11	x	x	3	9	x	6	14	69	31
Tunisia	17	14	5	15	5	5	7	10	5	a	17	100	a
Uruguay	13	13	19	18	8	a	5	5	a	a	a	81	19
Zimbabwe	14	14	11	9	14	9	7	4	7	10	2	100	n

1. See Annex 3 for descriptions of subjects and sources of intended instruction time.
2. Year of reference 1998 for all WEI countries.
• See Annex 3 for notes.

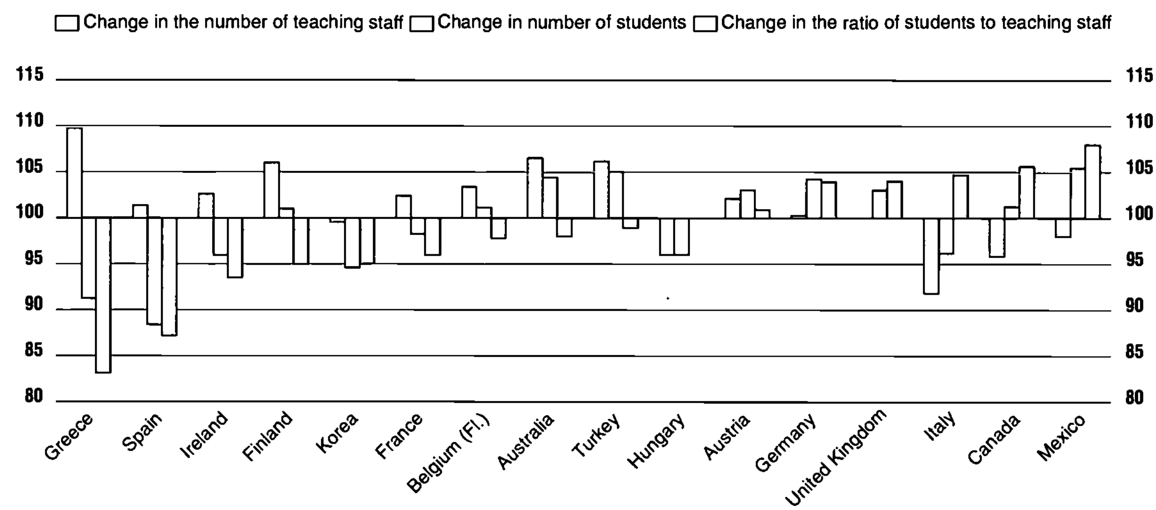
Source: OECD.

RATIO OF STUDENTS TO TEACHING STAFF

- In Korea and Turkey, the ratio of students to teaching staff in primary education is approximately three times as high as in Denmark and Hungary.
- Student access to teachers improves between primary and secondary education but to a varying degree in different countries: in France, Ireland, Korea and Turkey, the drop in the ratio of students to teaching staff from the primary to the secondary level is far more marked than in other countries.
- Some countries saw notable changes in the ratios of students to teaching staff between 1995 and 1999, as a result of either policy changes or a delay in matching the supply of teachers to demographic changes.

Chart D5.1. **Index of change between 1995 and 1999 (1995 = 100) in the number of teaching staff and students, and in the ratio of students to teaching staff**

In primary and secondary education for public and private institutions, calculations based on full-time equivalents



Countries are ranked in ascending order of the change in the ratio of students to teaching staff between 1995 and 1999.
Source: OECD. Table D5.2.

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POLICY CONTEXT

Although computers and information technology are becoming increasingly important as aids to learning in schools, teachers are still the most important resource in student instruction. The ratio of students to teaching staff is an important indicator of the resources which countries devote to education. Because of the difficulty of constructing direct measures of educational quality, this indicator is also often used as a proxy for quality, on the assumption that a smaller ratio of students to teaching staff means better access by students to teaching resources.

A smaller ratio of students to teaching staff may have to be weighed against higher salaries for teachers and larger class sizes, 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 reductions in the ratio of students to teaching staff.

EVIDENCE AND EXPLANATIONS

What this indicator shows...

This indicator shows the ratio of students to teaching staff, 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.

... and what it does not show.

The concept of a ratio of students to teaching staff is different from that of class size. Although one country may have a lower ratio of students to teaching staff than another, this does not necessarily mean that classes are smaller in the first country or that students in the first country receive more teaching. The relationship between the ratio of students to teaching staff and both average class size and hours of instruction per student is complicated by many factors, including differences between countries in the length of the school year, the number of hours for 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 division of the teacher's time between teaching and other duties, the grouping of students within classes, and the practice of team teaching.

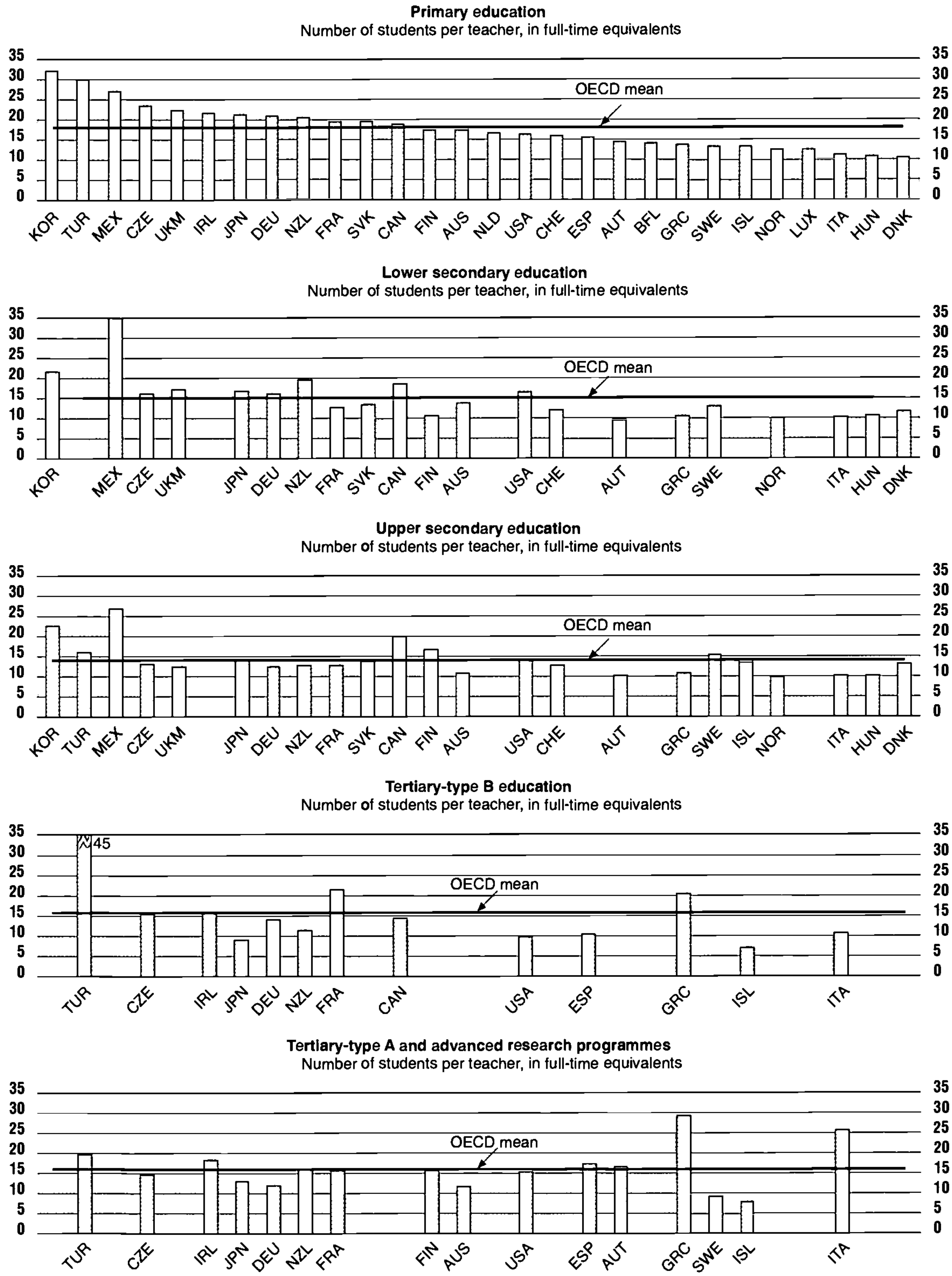
Primary and secondary education

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

The ratio of students to teaching staff in primary and secondary education varies widely between OECD countries. In primary education, the ratio of students to teaching staff, expressed in full-time equivalents, ranges from 32 students per teacher in Korea to 11 in Denmark and Hungary. The mean OECD ratio of students to teaching staff in primary education is 18 students per teacher, which is close to those observed in Australia (17.3), Canada (18.7) and Finland (17.4) (Chart D5.2).

Chart D5.2. **Ratio of students to teaching staff (1999)**

For public and private institutions, by level of education, calculations based on full-time equivalents



Countries are ranked in descending order of the number of students per teacher at the primary level of education.
Source: OECD. Table D5.1.

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There is slightly more variation between countries in the ratio of students to teaching staff at the secondary level, ranging from more than 21 students per full-time equivalent teacher in Korea and Mexico to below 11 in Austria, the Flemish Community of Belgium, Greece, Hungary, Italy and Luxembourg. It is worth noting that the ratio of students to teaching staff is just one of several indicators of the quality of educational provision. Eighth-grade students in Korea, for example, perform very well in mathematics despite a high ratio of students to teaching staff while students in Italy only achieve average results despite a ratio of students to teaching staff that is less than half that in Korea (see indicator F1).

The mean OECD ratio of students to teaching staff in secondary education is 14.6, which is close to the ratios in the Czech Republic (14.7), Germany (15.2), Ireland (14.6), Japan (15.4), Sweden (14.5), the United Kingdom (14.7) and the United States (15.6) (Table D5.1).

Student access to teachers improves between primary and secondary education.

As the difference in the mean ratio of students to teaching staff between primary and secondary education indicates, there are fewer students per teacher as the level of education rises. With the exception of Canada, Denmark, Mexico, the Netherlands and Sweden, the ratio of students to teaching staff decreases in every OECD country between the primary and the secondary level.

In France, Ireland, Korea and Turkey, the drop in the ratio of students to teaching staff from the primary to the secondary level is far more marked than in other countries.

While the rank orders of countries according to the ratio of students to teaching staff remain fairly stable between the two levels of education, there are some exceptions. In France, Ireland, Korea and Turkey, the drop in the ratio of students to teaching staff at the primary and secondary levels is far more marked than in other countries, with a difference between the two levels of between seven and ten students per full-time equivalent teacher. This variation may reflect differences in the relative importance which countries give to student access to teaching staff at a particular level of education, but it may also result from delays in matching the teaching force to demographic changes, or from differences in teaching hours for teachers at the various levels of education. While the general trend is consistent across countries, from an educational point of view it is not always obvious why a smaller ratio of students to teaching staff should be more desirable at higher levels of education.

Many factors contribute to these differences.

A broad range of factors have to be considered in the interpretation of differences in the ratio of students to teaching staff, including institutional structures, typical class sizes, the number of classes taught by a typical "teacher" per term, the degree of "hands-on" training, and the duration of studies. In addition, more accurate definitions of "teachers" and more precise counts of full-time equivalent students and teachers may be required to produce more comparable ratios of students to teaching staff.

Some countries saw notable changes in the ratio of students to teaching staff between 1995 and 1999.

Table D5.2 shows changes in the number of teachers and of students enrolled, and in ratios of students to teaching staff in primary and secondary education over the period 1995 to 1999. In Greece, Finland, Ireland and Spain, the ratio of students to teaching staff at primary and secondary levels decreased by 5 per cent or more between 1995 and 1999. In comparison, Canada, Italy and Mexico saw increases of between 5 and 8 per cent.

Changes in the ratio of students to teaching staff may reflect policy changes, but they may also result from delays in matching the supply of teachers to changes in the demography of the youth population. Australia, Austria, Germany, Mexico, the United Kingdom and Turkey saw increases of 3 per cent or more in their student populations at primary and secondary levels over the period 1995 to 1999. Of these countries, only Australia and Turkey saw a rise in the number of teachers equal to or larger than the rise in the number of students. In the other countries, therefore, the ratio of students to teaching staff increased.

Conversely, in the Czech Republic, Greece, Hungary, Ireland, Italy, Korea, Poland and Spain, the number of students enrolled at primary and secondary levels decreased by 3 per cent or more over the period 1995 to 1999. However, in Italy, the number of teachers decreased at a much faster pace, leading to an increase of 5 per cent in the ratio of students to teaching staff. The ratio of students to teaching staff decreased in other countries.

Tertiary education

In general, the ratio of students to teaching staff at the tertiary level tends to be lower than the ratio in both primary and secondary education.

The average ratio of students to teaching staff in OECD countries at the tertiary level is the lowest of all educational levels. The ratio of students to teaching staff in public and private tertiary institutions ranges from 26 students per teacher in Greece to 12 or below in Iceland, Japan, the Slovak Republic and Sweden (Table D5.1). Such comparisons in tertiary education, however, should be undertaken with caution since difficulties in calculating full-time equivalent students and teachers on a comparable basis still persist at the tertiary level.

In eight out of the 12 countries for which data are available on both tertiary A and B programmes, the ratio of students to teaching staff is lower in tertiary-type B programmes, which are generally more occupationally specific, than in tertiary-type A and advanced research programmes. The average ratio of students to teaching staff in tertiary-type B programmes across OECD countries is 15.7 in contrast to 16.2 in tertiary-type A and advanced research programmes (Chart D5.2). The Czech Republic, France, Germany and Turkey are the four countries with a higher ratio in tertiary-type B programmes than in tertiary-type A and advanced research programmes.

Pre-primary education

The ratio of students to teaching staff in pre-primary education tends to be in between those 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 below seven students per teacher in Denmark, Iceland, New Zealand and Norway to over 23 students per teacher in Germany, Korea and Mexico. Part of this variation may be due to differences in the organisation of pre-primary education, there being a greater variety of educational institutions offering pre-primary education in many countries.

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.

DEFINITIONS AND METHODOLOGIES

Data refer to the school years 1998/1999 and 1994/1995, and are based on the UOE data collection on education statistics, administered in 1999 (for details see Annex 3).

The OECD classification of educational personnel is intended to serve as a framework for classifying school personnel at all levels of education. The classification is based on function and organises staff into four main functional categories. The classification is: *i)* Instructional Personnel; *ii)* Professional Support for Students; *iii)* Management/Quality Control/Administration; *iv)* maintenance and Operations Personnel. Teaching staff (teachers) and teachers' aides make up the category instructional personnel. For the purpose of this indicator, only teaching staff is taken into account.

"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 students as a whole class in a classroom, in small groups in a resource room, or in one-to-one teaching inside or outside a regular classroom. Teaching staff also includes chairpersons of departments whose duties include some amount of teaching, but it does not include non-professional personnel who support teachers in providing instruction to students, such as teachers' aides and other paraprofessional personnel.

Table D5.1. **Ratio of students to teaching staff (1999)**

For public and private institutions, by level of education, calculations based on full-time equivalents

	Pre-primary education	Primary education	Lower secondary education	Upper secondary education	All secondary education	Tertiary-type B	Tertiary-type A and advanced research programmes	All tertiary education
OECD countries								
Australia[2]	m	17.3	13.7	10.8	12.7	m	11.8	m
Austria*	17.5	14.5	9.6	10.0	9.8	m	16.5	15.0
Belgium (Fl.)*	17.7	13.9	x	x	8.8	x	x	18.1
Canada*	15.1	18.7	18.7	20.0	19.3	14.5	m	m
Czech Republic	19.5	23.4	16.2	13.1	14.7	15.3	14.8	14.9
Denmark	6.5	10.6	11.6	13.2	12.4	m	m	m
Finland*	12.3	17.4	10.6	16.6	13.5	x	15.7	m
France	19.3	19.6	12.9	12.7	12.8	21.4	15.8	16.9
Germany	23.7	21.0	16.4	12.4	15.2	13.9	12.0	12.3
Greece	15.9	13.5	10.6	10.7	10.6	20.2	29.3	26.0
Hungary*	11.8	10.9	10.9	10.3	10.6	x	x	12.1
Iceland*	5.7	13.3	x	13.5	m	7.0	8.2	8.0
Ireland*	14.7	21.6	x	x	14.6	15.9	18.2	17.3
Italy*	13.2	11.3	10.3	10.2	10.3	10.6	25.6	24.8
Japan	19.0	21.2	17.1	14.1	15.4	9.1	13.0	11.5
Korea	23.9	32.2	21.9	22.5	22.2	m	m	m
Luxembourg[1]*	16.7	12.5	x	x	9.9	m	m	m
Mexico	24.4	27.2	35.5	26.9	32.2	x	x	14.8
Netherlands*	x	16.6	x	x	17.7	m	m	12.0
New Zealand	6.6	20.5	19.8	12.8	16.1	11.3	16.0	14.8
Norway*	5.1	12.6	10.1	9.9	m	x	x	13.4
Poland	m	m	m	m	m	m	m	m
Portugal	m	m	m	m	m	m	m	m
Slovak Republic	10.4	19.6	13.5	13.8	13.6	x	x	10.3
Spain*	17.1	15.4	x	x	12.9	10.2	17.3	16.4
Sweden*	m	13.3	13.3	15.5	14.5	x	9.3	9.5
Switzerland[1]	17.8	16.1	12.1	12.6	12.3	m	m	m
Turkey	15.3	30.0	a	16.1	16.1	45.4	19.5	21.5
United Kingdom[3]*	16.5	22.5	17.4	12.4	14.7	x	x	18.5
United States	19.3	16.3	16.8	14.5	15.6	9.8	15.4	14.0
Country mean	**15.4**	**18.0**	**15.2**	**14.1**	**14.6**	**15.7**	**16.2**	**15.3**
WEI participants								
Argentina	18.1	20.7	15.5	12.4	14.3	19.7	29.0	m
Brazil	21.2	28.9	33.7	38.6	36.2	x	x	13.3
Chile	52.6	33.4	33.4	26.9	29.1	m	m	m
China	27.4	m	m	m	m	14.2	14.7	m
Egypt	m	23.4	22.0	12.6	16.9	m	m	m
Indonesia	19.0	23.1	19.8	17.2	18.7	x	x	12.5
Israel[1]	m	17.4	12.7	10.4	11.3	m	m	m
Jordan[1]	21.4	x	x	17.3	10.1	m	m	m
Malaysia[1]	27.1	21.6	x	x	19.3	m	m	m
Paraguay	24.6	19.7	x	x	9.9	10.3	m	m
Peru	27.5	23.5	17.2	x	17.2	14.3	13.6	13.9
Philippines	11.3	34.4	x	x	32.9	a	17.2	17.2
Russian Federation	m	17.6	m	m	11.5	12.3	10.1	11.0
Thailand	24.6	20.7	23.5	21.6	22.7	30.9	27.5	28.5
Tunisia[1]	10.9	23.9	25.8	21.3	23.8	x	x	26.5
Uruguay	31.0	20.6	11.7	24.8	15.1	x	x	7.4
Zimbabwe	m	41.0	14.5	m	27.3	x	x	32.3

1. Public institutions only.
2. Includes only general programmes at lower and upper secondary education.
3. Includes only general programmes at upper secondary education.
* See Annex 3 for notes.

Source: OECD.

D5

Table D5.2. **Index of change between 1995 and 1999 (1995 = 100) in the number of teaching staff and students, and in the ratio of students to teaching staff**

For public and private institutions, by level of education, calculations based on full-time equivalents

	Number of teaching staff					Number of students					Ratio of students to teaching staff				
	Primary education	Lower secondary education	Upper secondary education	All secondary education	Primary and secondary education	Primary education	Lower secondary education	Upper secondary education	All secondary education	Primary and secondary education	Primary education	Lower secondary education	Upper secondary education	All secondary education	Primary and secondary education
Australia[1]	108	x	x	105	107	103	103	111	105	104	95	x	x	100	97
Austria	107	99	102	100	102	104	98	110	103	103	97	99	108	102	101
Belgium (Fl.)	110	x	x	100	103	104	93	102	99	101	95	x	x	99	98
Canada	89	102	105	103	96	100	97	109	103	101	112	95	104	100	106
Czech Republic*	m	m	m	m	m	121	97	68	82	95	m	m	m	m	m
Finland*	110	109	100	104	106	100	100	103	102	101	90	92	103	98	95
France	97	x	x	105	102	97	x	x	99	98	100	x	x	94	96
Germany	100	100	102	101	100	101	105	108	106	104	102	105	107	106	104
Greece	108	111	111	111	110	91	87	96	92	91	84	79	87	83	83
Hungary	105	86	98	91	96	99	97	91	94	96	94	113	93	103	100
Ireland	100	x	x	105	103	94	92	107	98	96	94	x	x	93	94
Italy	95	87	92	90	92	102	93	92	93	96	107	107	100	103	105
Korea	100	93	106	100	100	101	77	104	89	95	101	82	98	90	95
Mexico[2]	105	85	100	91	98	101	115	115	115	105	96	135	116	127	108
Poland	m	m	m	m	m	92	a	109	109	97	m	m	m	m	m
Spain*	x	x	x	x	101	x	x	x	x	88	x	x	x	x	87
Turkey	106	x	101	x	106	104	x	109	x	105	98	x	108	x	99
United Kingdom[3]	98	95	104	101	100	103	104	102	103	103	105	109	98	103	104
Country mean	**103**	**97**	**102**	**100**	**101**	**101**	**97**	**102**	**99**	**99**	**98**	**102**	**102**	**101**	**98**

1. Includes only general programmes at lower and upper secondary education.
2. The number of teachers is based on head counts.
3. Includes only general programmes at upper secondary education.
* See Annex 3 for notes.

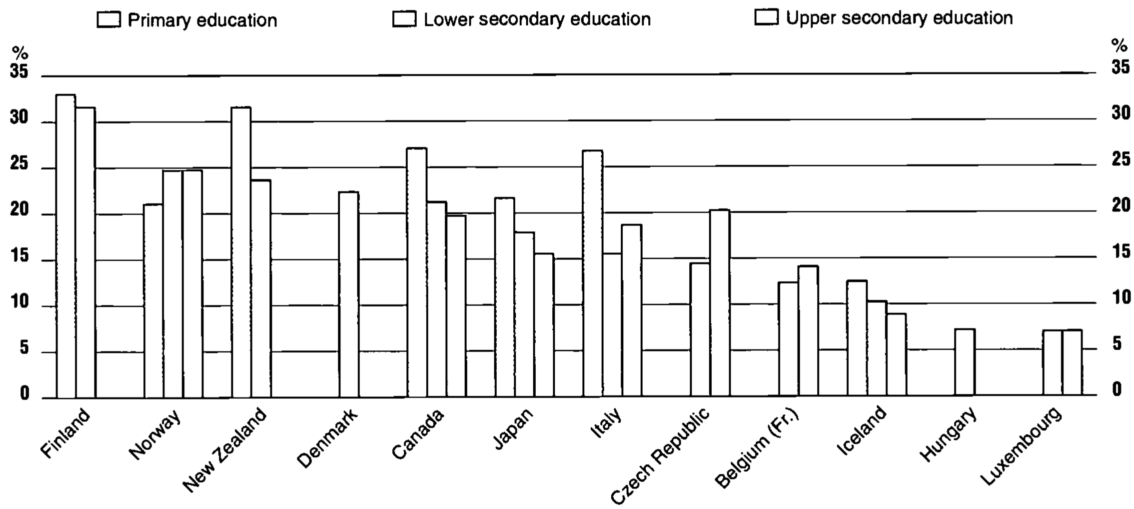
Source: OECD.

TRAINING TEACHERS IN INFORMATION AND COMMUNICATION TECHNOLOGY

- In all countries, between 70 and 90 per cent of principals in primary schools report that they set goals for the training of all teachers in ICT.
- However, the percentage of principals in primary schools reporting that this goal has been achieved ranges from 30 per cent or more in Finland and New Zealand to only 10 per cent in Iceland.
- At the lower secondary level, the percentage of school principals reporting that all teachers have received ICT training varies from over 20 per cent in Finland, Norway and New Zealand to 8 per cent or less in Hungary, Iceland and Luxembourg.

Chart D6.1. **Goals and realisation of goals for training teachers in ICT (1998-1999)**

Ratio of goals adopted by school principals for training all teachers in ICT to the realisation of these goals, multiplied by 100, by level of education



Countries are ranked in descending order of the ratio of goals adopted by school principals for training all teachers in ICT to the realisation of these goals, in lower secondary schools.

Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES. Table D6.1.

D6

POLICY CONTEXT

This indicator highlights the training goals that school principals set for training their teachers, and the extent to which these goals are achieved.

The rapid evolution of information and communication technology (ICT) has resulted in an abundance of new products, markets and business models. ICT is potentially a powerful catalyst for growth and efficiency. In order to use information technology in teaching and learning, teachers need not become specialists in information technology. They must, however, master ICT skills at least at the level of the average student, or somewhat higher, and must be able to integrate ICT into their teaching and to prepare students for the information society. The extent to which teachers have access to ICT training can be regarded as an indicator of a school's adjustment to technological progress and to new forms of teaching methodology.

EVIDENCE AND EXPLANATIONS

On average, seven out of ten primary and lower secondary school principals have set the goal of training all teachers in ICT...

School principals in the 13 Member countries participating in the Second Information Technology in Education Study (IEA/SITES) have set ambitious goals for the training of teachers in new information technologies. At least 70 per cent of school principals intend to train all teachers in ICT, except in secondary education in Japan. In Finland, New Zealand and Norway, this figure is close to 95 per cent in secondary education (Table D6.1). Note that the percentages of principals and teachers given throughout this indicator are weighted by the numbers of students for whom they are responsible. For further details see definitions and methodologies.

... but so far only Finland has managed to achieve this goal in over 30 per cent of schools.

There are significant differences between countries in the realisation of these training objectives. In Finland and New Zealand, at least 30 per cent of school principals claim that all primary teachers have received ICT training.

At the lower secondary level, results remain close to those in primary education in terms of the goal of training all teachers. This tends to confirm the desire of school principals to keep pace with the arrival of new technologies. With the exception of Finland, however, fewer than 30 per cent of school principals report that the training of all teachers in ICT has actually been achieved.

At the upper secondary level, school principals' objectives were less ambitious in the French Community of Belgium, and particularly so in Japan. Goals to provide all teachers with ICT training were set by fewer than 50 per cent of upper secondary school principals in Japan. In all other countries, the proportion of school principals in upper secondary education who adopted the goal of providing all teachers with ICT training is similar to that in lower secondary education (Table D6.1).

Nature and location of ICT training for teachers

Introductory courses are predominantly organised within the school...

In order to ensure the efficient use of ICT in education, internal or external training opportunities may be important. Teacher training provides one of the keys to the effective use of ICT in schools. To this end, the schools' IT specialists were asked if teachers had the opportunity to attend training programmes to make better use of ICT and if such training programmes were available within the school or externally.

According to reports received from participating countries, introductory courses in hardware, software and use of the Internet appear to be generally available within schools for teachers in upper secondary education. With the exception of Japan, which has more external than internal introductory courses, over 43 per cent of schools in all other participating countries reported more in-house than external training opportunities for upper secondary school teachers (Tables D6.2*a-c*). In lower secondary education, Hungary, Iceland and Japan opt predominantly for external ICT teacher training. In Iceland, for example, introductory courses on software are available externally for 68 per cent of lower secondary teachers, as compared with 26 per cent of courses which are available internally (Table D6.2*b*). By contrast, in Italy, the proportion of secondary teachers with access to general introductory courses on software and hardware in the school is close to or exceeds 70 per cent (Tables D6.2*a*, *b*).

... whereas computer operation and management courses are mainly organised outside the school.

For more advanced or specialised courses – for example, in operations and computer systems management, programming, advanced use of the Internet, applications or use of video and computerised teaching applications – school principals draw more on external training opportunities (Tables D6.2*a-d*). At least 34 per cent of secondary school principals in Canada, Hungary, Iceland and Japan, for example, report the availability of external advanced courses in the use of applications (Table D6.2*b*). Similarly, external subject-specific training is available for over 30 per cent of lower secondary teachers in Canada, Denmark, Iceland and Japan. Italy is the only country where internal training is preferred to external training in both lower and upper secondary education for all advanced and specialised courses in hardware, software and use of the Internet (Tables D6.2*a-c*).

Results indicate that schools may be more well equipped in terms of staff and expertise to provide secondary teachers with basic ICT training. However, the more specialised and advanced the level of training that is required, the more likely it is that schools will have to look to external service providers to fulfil training needs.

Training teachers to use the Internet

Teachers need to be trained to use the Internet effectively...

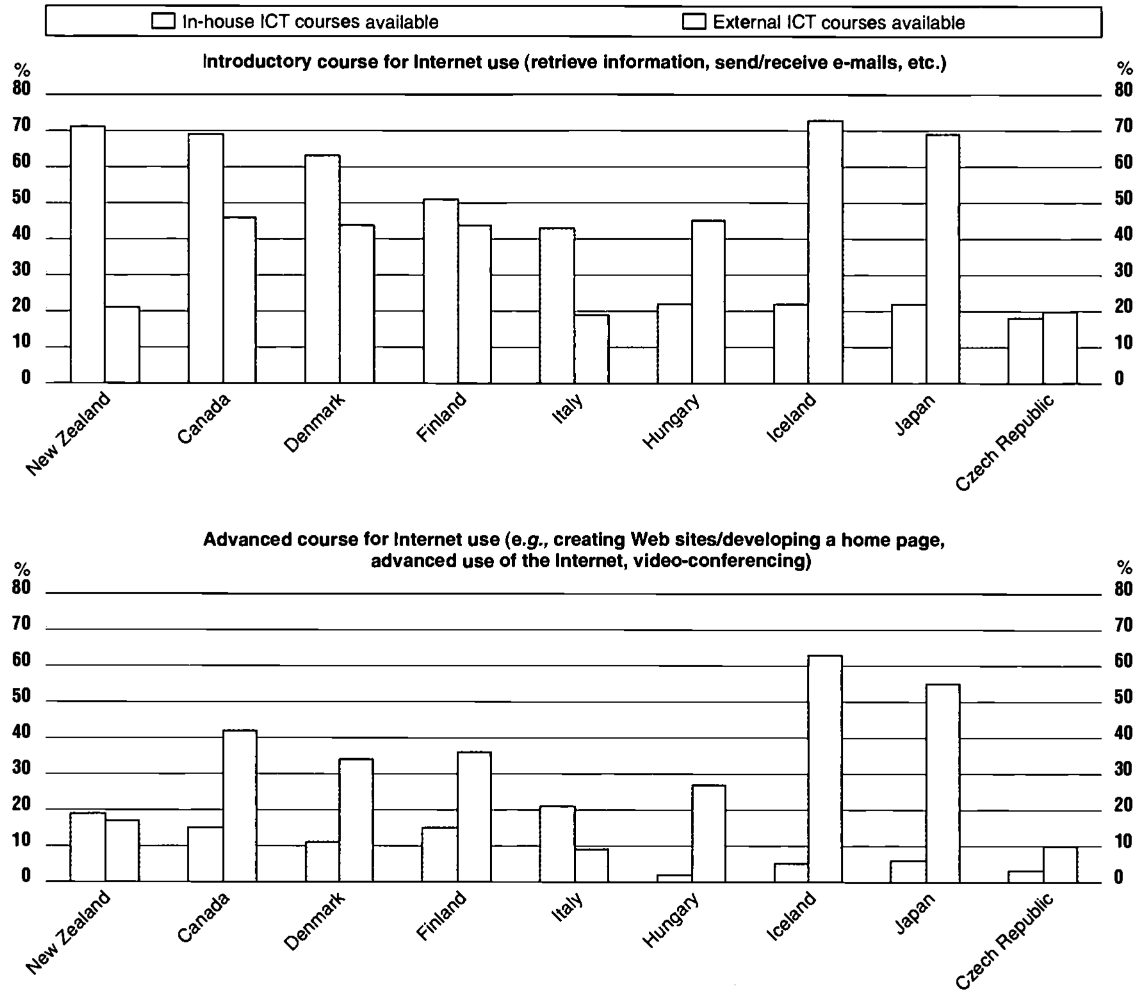
The use of the Internet is increasingly used in educational settings (Table D6.2*c*). Teachers must be trained not only to use the Internet but also to integrate this tool into the teaching and learning process. In Canada, Denmark and New Zealand, in-house introductory courses to the Internet are available for teachers in over 60 per cent of lower secondary schools. These courses are available externally in around 70 per cent of lower secondary schools in Iceland and Japan, and internally in only 18 per cent of schools in the Czech Republic (Chart D6.2).

... but this type of training is still rarely available for teachers within the school.

Training courses on the advanced use of the Internet (web design, videoconference) have also become increasingly popular. Many schools are developing their own web sites, while schools in remote areas can now communicate with other schools via electronic bulletin boards and video-conferencing. This type of training is often not available internally. Given the level of specialisation required, teachers in most participating countries

Chart D6.2. **Nature and location of ICT training on the Internet (1998-1999)**

Percentage of schools in lower secondary education where ICT training on introductory and advanced courses on the Internet are available, by location of training, expressed as a percentage of students



Countries are ranked in descending order of in-house ICT courses available on introductory courses for Internet use.
Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES. Table D6.2*c*.

seem to have access to external training, however. With the exception of teachers in upper secondary education in Iceland (35 per cent), less than 25 per cent of teachers have access to in-school training, while more than 34 per cent of teachers in Canada, Denmark, Finland, Iceland and Japan have access to external training (Table D6.2*c*).

How teachers transfer ICT *knowledge*

The training of teachers in ICT is an ongoing process. In order to gain a clear understanding of this process, the IEA/SITES survey asked the IT specialists within schools how knowledge relevant to the use of ICT is transferred between teachers.

In primary schools, this process occurs largely through informal contacts and communications. Training by the school's IT specialist is reported to be the second most common means of transfer of knowledge, followed by in-school and then external courses. School principals in at least 35 per cent of schools report that teachers gain knowledge of ICT via an external provider. In Canada and New Zealand, over 40 per cent of teachers repeat external courses. Matters relating to ICT rarely appear on staff meeting agendas, except in Canada (31 per cent) (Table D6.3*a*).

Informal communication is the most common means by which primary school teachers acquire a knowledge of ICT...

A similar pattern can be seen at the secondary level, where knowledge is predominantly transferred through indirect or informal contact, followed by training by the school's IT specialist. However, a number of exceptions are worth noting. It is reported, for example, that greater use is made of school ICT working groups in lower secondary education in Canada and New Zealand than in other countries (45 and 61 per cent respectively). In contrast, in Hungary no communication mode exceeds 40 per cent. A large number of upper secondary teachers in the French Community of Belgium share knowledge when attending out-of-school training courses (59 per cent), while almost 80 per cent of teachers in Italy and Norway benefit from information shared during in-school training (Table D6.3*b*).

☐ DEFINITIONS AND METHODOLOGIES

This report refers to data from Module 1 of the Second Information Technology in Education Study (SITES). SITES-1 is an international comparative study on the use of Information and Communication Technology (ICT) in primary and secondary education in 26 countries conducted in 1998 by the International Association for the Evaluation of Educational Achievement (IEA). The indicator covers a population of students attending schools that provide both primary and secondary education. In the case of primary education, students were aged ten years by the eighth month of the school year; in lower secondary education, students were aged 14 years by the eighth month of the school year; and in upper secondary, the population included all students attending the final year of secondary education. A school questionnaire was used to collect data for Module 1 of SITES. The first part of the questionnaire, which addressed issues such as the school's organisation, policies and level of preparation, and the training of teaching staff in ICT, was completed by the school principal. The second part of the questionnaire was completed by the individual most informed about ICT infrastructure and implementation within the school or by the "IT specialist". The school principals' and IT specialists' responses are weighted according to the number of students enrolled in each school.

These data were provided by the Second Information Technology in Education Study (SITES) conducted under the supervision of the International Association for the Evaluation of Educational Achievement (IEA). The reference year is 1998.

Table D6.1. **Goals and realisation of goals for training teachers in ICT (1998-1999)**

Percentage of students in schools whose principals indicated that the school had adopted policy goals to train all teachers to use ICT and percentage reflecting whether these goals were almost completely or fully realised, by level of education

	Primary education		Lower secondary education		Upper secondary education	
	Goals	Realisation	Goals	Realisation	Goals	Realisation
Belgium (Fr.)[1]	m	m	81	10	78	11
Canada[2]	85	23	80	17	81	16
Czech Republic	m	m	83	12	84	17
Denmark	m	m	85	19	m	m
Finland[2]	97	32	98	31	m	m
Hungary	m	m	97	7	m	m
Iceland	80	10	78	8	79	7
Italy[1]	86	23	90	14	91	17
Japan	74	16	67	12	45	7
Luxembourg	m	m	71	5	71	5
New Zealand[1]	95	30	93	22	m	m
Norway	95	20	97	24	97	24

1. Country did not satisfy all sampling criteria, secondary education.
2. Country did not satisfy all sampling criteria, primary and secondary education.

Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

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Table D6.2*a*. Nature and location of ICT training on hardware for teachers (1998-1999)

Percentage of schools in secondary education where ICT training on hardware is available, by location of training and type of training course, expressed as a percentage of students

	General introductory course (how to use a computer, principles of software and hardware, function of mouse, printer)				Introductory technical course for operating and maintaining computer systems				Advanced technical course for operating and maintaining computer systems (*e.g.*, networks, special equipment)			
	Lower secondary education		Upper secondary education		Lower secondary education		Upper secondary education		Lower secondary education		Upper secondary education	
	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available
Canada[1]	65	44	60	45	9	30	13	31	3	26	7	30
Czech Republic	58	28	73	18	4	8	10	10	1	8	4	15
Denmark	67	36	m	m	9	38	m	m	5	38	m	m
Finland[1]	41	38	m	m	6	23	m	m	3	23	m	m
Hungary	46	47	m	m	15	26	m	m	2	24	m	m
Iceland	30	66	50	36	2	46	n	51	n	40	n	35
Italy[1]	77	19	78	14	15	2	11	3	3	8	4	6
Japan	48	72	47	54	32	50	20	45	4	46	1	44
New Zealand[1]	74	13	m	m	17	13	m	m	6	18	m	m

1. Country did not satisfy all sampling criteria.
Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

Table D6.2*b*. Nature and location of ICT training on software for teachers (1998-1999)

Percentage of schools in secondary education, where ICT training on software is available, by location of training and type of training course, expressed as a percentage of students

	Introductory course for applications/ standard tools				Advanced course for applications/ standard tools				Programming course			
	Lower secondary education		Upper secondary education		Lower secondary education		Upper secondary education		Lower secondary education		Upper secondary education	
	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available
Canada[1]	58	49	56	51	15	36	22	44	2	20	8	29
Czech Republic	45	31	66	19	13	14	24	20	1	7	4	10
Denmark	65	51	m	m	12	33	m	m	2	14	m	m
Finland[1]	35	43	m	m	7	25	m	m	5	15	m	m
Hungary	41	53	m	m	10	37	m	m	3	18	m	m
Iceland	26	68	68	31	4	48	20	34	1	21	9	37
Italy[1]	67	16	71	11	12	8	19	9	16	8	20	6
Japan	11	63	8	56	9	51	7	50	6	54	5	47
New Zealand[1]	68	22	m	m	27	17	m	m	7	11	m	m

1. Country did not satisfy all sampling criteria.
Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

Table D6.2c. **Nature and location of ICT training on the Internet and multimedia for teachers (1998-1999)**

Percentage of schools in secondary education where ICT training on the Internet and multimedia is available, by location of training and type of training course, expressed as a percentage of students

	Introductory course for Internet use (retrieve information, send/ receive e-mails, etc.)				Advanced course for Internet use (e.g. creating websites/developing a home page, advanced use of Internet, video-conferencing)				Special course with digital video- and audio-equipment			
	Lower secondary education		Upper secondary education		Lower secondary education		Upper secondary education		Lower secondary education		Upper secondary education	
	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available
Canada[1]	69	46	64	47	15	42	22	46	10	23	16	24
Czech Republic	18	20	43	16	3	10	12	16	2	2	3	6
Denmark	63	44	m	m	11	34	m	m	15	34	m	m
Finland[1]	51	44	m	m	15	36	m	m	3	16	m	m
Hungary	22	45	m	m	2	27	m	m	n	13	m	m
Iceland	22	73	84	40	5	63	35	54	1	21	9	19
Italy[1]	43	19	47	16	21	9	24	6	6	4	11	6
Japan	22	69	23	64	6	55	5	50	7	44	6	35
New Zealand[1]	71	21	m	m	19	17	m	m	17	12	m	m

1. Country did not satisfy all sampling criteria.
Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

Table D6.2d. **Nature and location of ICT training on computing theory for teachers (1998-1999)**

Percentage of schools in secondary education where ICT training on computing theory is available, by location of training and type of training course, expressed as a percentage of students

	General introductory course (history of ICT, relevance and consequences of computer use, etc.)				General course about didactical/ pedagogical principles of computer use				Subject-specific training (with subject-specific learning software, e.g., tutorials or drill and practice software)			
	Lower secondary education		Upper secondary education		Lower secondary education		Upper secondary education		Lower secondary education		Upper secondary education	
	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available	In-house ICT courses available	External ICT courses available
Canada[1]	20	27	19	23	10	21	11	22	25	34	31	32
Czech Republic	16	10	27	9	6	5	4	10	25	7	13	12
Denmark	15	26	m	m	8	33	m	m	18	38	m	m
Finland[1]	5	12	m	m	4	19	m	m	9	18	m	m
Hungary	14	21	m	m	2	22	m	m	4	25	m	m
Iceland	2	41	5	17	1	38	5	28	13	31	6	24
Italy[1]	46	14	42	10	11	8	19	12	18	11	25	12
Japan	45	73	43	64	8	54	10	45	19	42	13	35
New Zealand[1]	20	12	m	m	9	13	m	m	27	17	m	m

1. Country did not satisfy all sampling criteria.
Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

Table D6.3*a*. **How primary teachers transfer ICT knowledge (1998-1999)**

Different ways in which ICT knowledge is transferred among teachers in primary education, expressed as a percentage of students

	1. Via informal contacts/communication	2. Via computer co-ordinator	3. Via in-school courses	4. Courses by an external agency	5. Teacher repeats external course	6. No organised structure	7. Via school's ICT working group	8. Regular item at staff meetings	9. Other means of transfer ICT knowledge	10. Via a regular newsletter
Canada[1]	89	68	46	35	49	15	46	31	6	11
Finland[1]	57	73	50	38	29	12	9	12	5	5
Iceland	83	78	36	41	13	34	4	6	14	1
Italy	52	38	57	42	19	18	40	10	2	1
Japan	52	40	51	42	26	16	19	15	3	8
New Zealand	78	80	59	44	44	14	42	17	m	3
Norway	86	69	47	41	16	28	15	3	3	2
Country mean	**71**	**64**	**49**	**40**	**28**	**20**	**25**	**13**	**6**	**4**

1. Country did not satisfy all sampling criteria.
Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

D6

Table D6.3*b*. **How secondary teachers transfer ICT knowledge (1998-1999)**

Different ways in which ICT knowledge is transferred among teachers in secondary education, expressed as a percentage of students

	Lower secondary education										Upper secondary education									
	1. Via informal contacts/communication	2. Via computer co-ordinator	3. Via in-school courses	4. Courses by an external agency	5. Teacher repeats external course	6. No organised structure	7. Via school's ICT working group	8. Regular item at staff meetings	9. Other means of transfer ICT knowledge	10. Via a regular newsletter	1. Via informal contacts/communication	2. Via computer co-ordinator	3. Via in-school courses	4. Courses by an external agency	5. Teacher repeats external course	6. No organised structure	7. Via school's ICT working group	8. Regular item at staff meetings	9. Other means of transfer ICT knowledge	10. Via a regular newsletter
Belgium (Fr.)[1]	75	56	28	21	60	23	15	7	n	4	77	58	27	22	59	23	15	7	n	4
Canada[1]	90	65	44	32	36	22	45	16	6	12	92	68	46	33	33	22	50	14	5	12
Czech Republic	85	35	32	10	17	17	6	11	2	n	89	49	38	14	25	11	37	10	6	3
Denmark	92	78	63	50	33	50	23	5	6	14	m	m	m	m	m	m	m	m	m	m
Finland[1]	67	72	45	33	19	14	7	3	9	2	m	m	m	m	m	m	m	m	m	m
Hungary	30	29	25	17	25	36	21	7	4	14	m	m	m	m	m	m	m	m	m	m
Iceland	85	79	30	33	9	45	3	6	13	2	100	85	41	37	12	29	20	13	4	9
Italy[1]	74	44	72	45	29	18	32	13	4	5	71	49	77	30	26	22	35	11	3	3
Japan	72	41	38	41	14	18	18	8	1	3	72	48	33	39	19	29	42	6	2	2
Luxembourg	89	74	43	52	24	52	6	n	n	n	90	75	39	50	22	53	6	n	5	n
New Zealand[1]	90	74	61	38	31	20	61	13	1	12	m	m	m	m	m	m	m	m	m	m
Norway	87	73	61	38	16	22	16	4	3	1	90	69	79	36	18	26	16	5	4	6
Country mean	**76**	**60**	**45**	**34**	**26**	**28**	**21**	**8**	**5**	**7**	**85**	**63**	**48**	**33**	**27**	**27**	**28**	**9**	**4**	**6**

1. Country did not satisfy all sampling criteria.
Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

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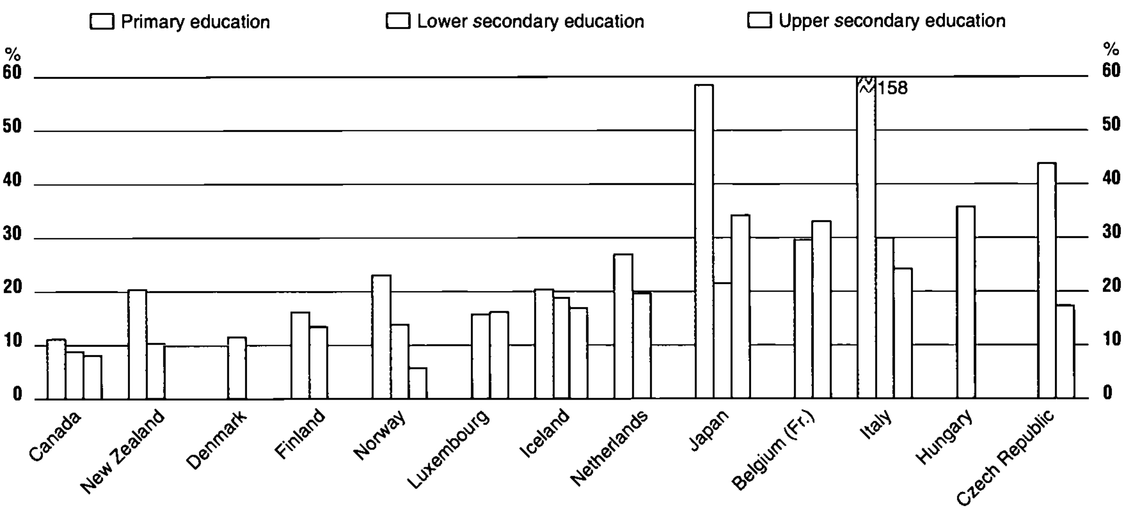
USE AND AVAILABILITY OF COMPUTERS IN SCHOOLS AND THE TEACHING-LEARNING PROCESS

- At the primary level, the percentage of students using computers ranges from 25 per cent in Italy to around 90 per cent or more in Canada, Finland and New Zealand.
- At the lower secondary level, the use of computers tends to be more widespread, and the ratios of students to computers are generally more favorable.
- In many countries, a significant amount of hardware in schools remains unused.
- At the primary level, over 75 per cent of schools in Canada, Finland, Iceland and New Zealand are connected to the Internet, while this figure is 28 per cent in Italy. Access to the Internet increases with the level of education.

Chart D7.1. **Ratio of students to computers (1998-1999)**

Ratio of total number of students to total number of computers available for students, by level of education



Countries are ranked in ascending order of the ratio of students to computers in lower secondary education.
Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES. Table D7.1.

POLICY CONTEXT

This indicator reviews the number of students per computer, how students use computers, the quality of computer hardware, and the nature of Internet implementation in primary and secondary schools.

OECD economies are increasingly dependent on technological knowledge and skills in the labour force. Students with little or no exposure to information technology in school may face difficulties in making a smooth transition to the modern labour market. Although the issue of how computers can and should be used by students and teachers so as to maximise students' learning outcomes is a matter of debate, measures of student access to information technology presented in indicator D7 shed some light on how schools and school systems try to respond to technological change. Likewise, the quantity and quality of computer hardware available to students is an indication of the extent to which countries have introduced ICT into education and training in a sustainable manner.

EVIDENCE AND EXPLANATIONS

Availability and use of hardware in schools

At the primary level, the percentage of students using computers ranges from 25 per cent in Italy to around 90 per cent or more in Canada, Finland and New Zealand.

The average number of students per computer is a proxy for the extent to which new technologies are accessible to students. Although the availability of hardware does not guarantee its effective use, an inadequate number of computers can seriously affect the dissemination and development of ICT within schools. Table D7.1 shows the percentage of students using available computers and the average number of students per computer. At the primary level, the percentage of students using computers ranges from 25 per cent in Italy to around 90 per cent or more in Canada, Finland and New Zealand. The ratio of primary school students (including those who do not use computers) to computers ranges from 158 in Italy to 11 in Canada. Some countries have chosen to offer access to a larger number of students at the expense of a higher ratio of students to computers, while other countries with a lower ratio of students to computers have a somewhat lower percentage of students with access to computers.

At the lower secondary level, the use of computers tends to be more widespread, and the ratios of students to computers are generally more favourable.

At the lower secondary level, the use of computers tends to be more widespread, and the ratios of students to computers are generally more favourable. Lower secondary schools in the Czech Republic report an average of 44 students per computer while Canada, Denmark and New Zealand have no more than 12 students per computer (Chart D7.1). In upper secondary education, in Canada and Norway, there are fewer than ten students per computer, while there are more than 30 students per computer in the French Community of Belgium and Japan.

In many countries, a significant amount of hardware in schools remains unused.

Unused hardware can, like insufficient hardware, be a serious hindrance to the achievement of ICT goals. In the SITES survey, schools' IT specialists were asked to estimate the number of unused computers in addition to those available to students and teachers, and to explain why these computers were not in use (Table D7.2). Results indicate that there is a significant amount of unused hardware in schools. At the lower secondary level, over 60 per cent of schools in Canada, Finland, Iceland and New Zealand have unused computers. Among these schools, the proportion of computers that are unused is above 5 per cent in Finland, Iceland and New Zealand, and above 10 per cent in Canada (Table D7.2).

Those countries with the largest numbers of unused computers (Table D7.2), such as Canada, Finland, Iceland and New Zealand, are also among the countries with the most equipment available (Tables D7.4*a*, *c*). This may indicate that some computers were introduced into schools a long time ago and have now become obsolete or have broken down. This seems most notably the case at the primary level. In Iceland, for example, incompatibility with more recent equipment accounts for one third of unused computers, although a high percentage of students use computers in Icelandic schools (Tables D7.1 and D7.2).

Schools connected to the Internet

At the primary level, over 75 per cent of schools in Canada, Finland, Iceland and New Zealand are connected to the Internet, while this figure is 28 per cent in Italy.

In order to assess national policies with regard to developing the use of the Internet in schools, the IT specialists in the sampled school were asked whether the school was on-line and, if not, whether the school planned to provide its computers with Internet connections by 2001 (Table D7.3). At the time of the survey, over 75 per cent of primary schools were connected to the Internet in Canada, Finland, Iceland and New Zealand. With the exception of Italy, where 28 per cent of primary schools were connected, in all other countries participating in the survey more than half of primary schools were connected to the Internet.

However, many countries have ambitious plans for the schools not currently connected to the Internet. Italy, for example, has the lowest connection rate, 28 per cent, but aims to connect 71 per cent of primary schools to the Internet by 2001 (Chart D7.2).

Access to the Internet increases with the level of education.

Access to the Internet tends to increase with the level of education. In Canada, Iceland and Norway, Internet access is intended to be virtually universal by 2001 in upper secondary education. Japan is the only country to report fewer secondary schools with Internet connections than primary schools.

Availability of peripheral devices in schools

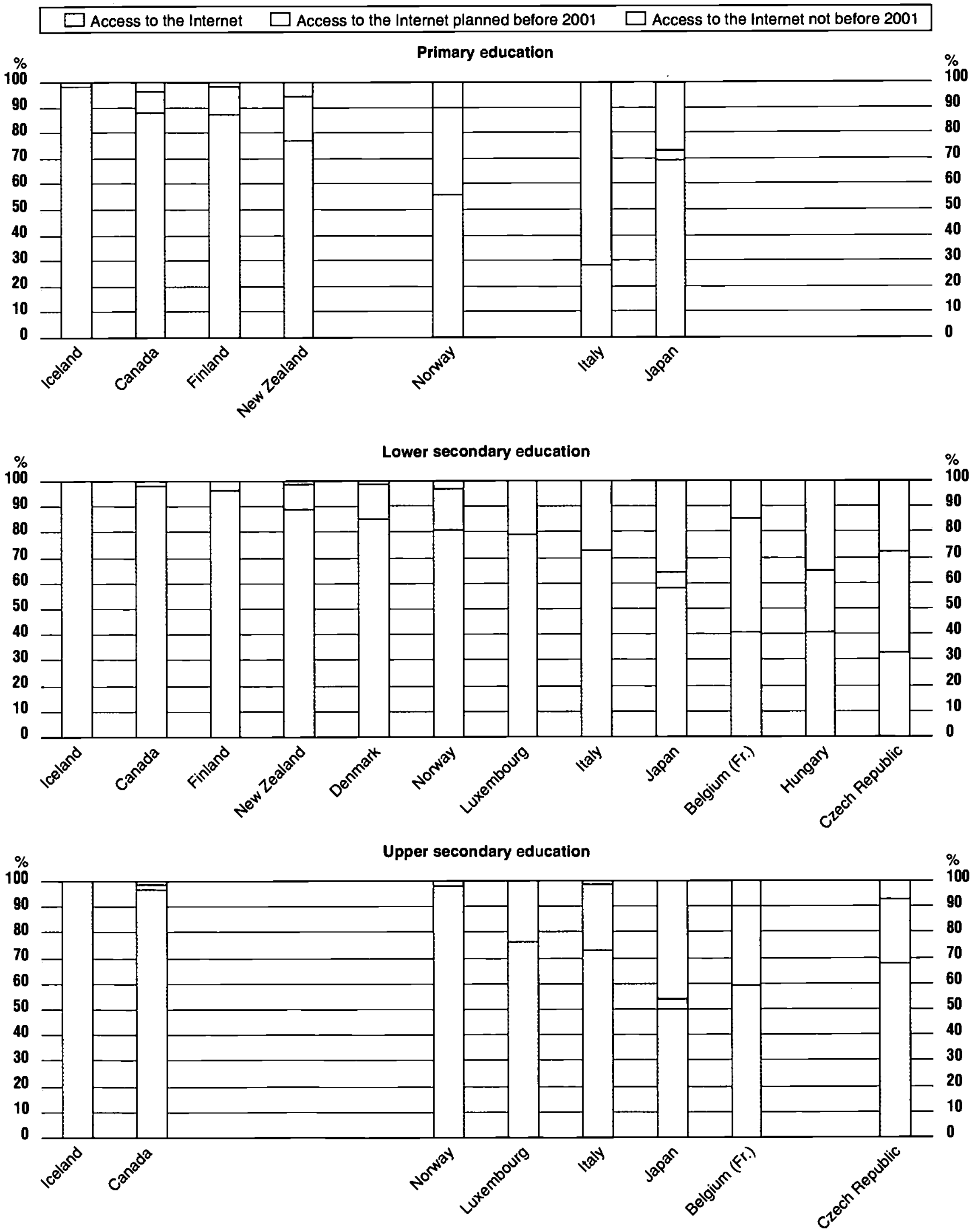
The indicator also provides information on the availability of three groups of standard peripheral devices (Tables D7.4 *a*, *b*, *c*).

Devices available in standard configurations, such as printers, scanners, CD-ROM drives and CD writers, are user-friendly, relatively inexpensive and widely distributed. The use of such devices therefore poses little problem for beginners. Colour printers, for example, are available in more than 85 per cent of lower secondary schools in Finland and Luxembourg (Table D7.4*a*).

Schools sometimes own more specialised peripherals that are adapted to education, such as image and video processing devices, graphic tablets, video projectors, scanners and liquid crystal display

Chart D7.2. **Use of the Internet in schools (1998-1999)**

Percentage of schools that have access or intend to have access to the Internet for instructional purposes, by level of education



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Countries are ranked in descending order of the percentage of lower secondary schools with access to the Internet.
Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES. Table D7.3.

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(LCD) panels. These devices are suitable for presentations, documentation management and image processing. Operation of these devices usually requires more advanced training, and the hardware itself can be expensive. Over 70 per cent of lower secondary schools in Iceland and Luxembourg have video projectors (Table D7.4c).

Computers can also facilitate access to knowledge by means of peripherals adapted to meet the needs of students with disabilities. Few countries have introduced this aspect of ICT into schools. Countries reporting the highest figures for "other devices" do not necessarily possess equipment suitable for students with disabilities. While Canada and Norway report that over 20 per cent of secondary schools possess equipment suitable for students with disabilities, in Belgium (French Community), the Czech Republic, Hungary, Japan and Luxembourg, fewer than 5 per cent of lower secondary schools have computer equipment for students with disabilities.

Availability of computer software in schools

The most widely available software are Internet browsers, followed by CD-ROM encyclopaedias, desktop publishing software, interactive hands-on exercise packages and, lastly, educational games.

The use of software packages can allow teachers to approach certain subjects in more varied and interesting ways. The use of interactive multimedia packages, for example, encourages students to explore knowledge at their own pace while presenting this knowledge in a stimulating interactive manner. However, there is a marked disparity in the availability of different types of software. The choice of software often depends on global choices made within the framework of curriculum and national education policies. The most widely available software is Internet browsers, followed by CD-ROM encyclopaedias, desktop publishing software, interactive hands-on exercise packages and, lastly, educational games. It is interesting to note that over 90 per cent of schools use Internet browsers in Canada, Finland and Iceland.

The largest differences in availability between countries relate to encyclopaedia packages. These tools, which enable students to search for information and documentation, are widely used in some countries. Over 80 per cent of schools use this software at the lower secondary level in Canada, Denmark, Finland, Luxembourg, New Zealand and Norway. The use of this type of software is less common in the French Community of Belgium, the Czech Republic, Hungary, Iceland, Italy and Japan, where rates do not exceed 53 per cent (Table D7.5).

DEFINITIONS AND METHODOLOGIES

This report refers to data from Module 1 of the Second Information Technology in Education Study (SITES). SITES-1 is an international comparative study on the use of Information and Communication Technology (ICT) in primary and secondary education in 26 countries conducted in 1998 by the International Association for the Evaluation of Educational Achievement (IEA). The indicator covers a population of students attending schools that provide both primary and secondary education. In the case of primary education, students were aged ten years by the eighth month of the school year; in lower secondary education, students were aged 14 years by the eighth month of the school year; and in upper secondary, the population included all students attending the final year of secondary education. A school questionnaire was used to collect the data for Module 1 of SITES. The first part of the questionnaire, which addressed issues such as the school's organisation, policies and level of preparation, and the training of teaching staff in ICT, was completed by the school principal. The second part of the questionnaire was completed by the individual most informed about ICT infrastructure and implementation within the school. The school principals' and IT-specialists' responses are weighted according to the number of students enrolled in each school.

These data were provided by the Second Information Technology in Education Study (SITES) conducted under the supervision of the International Association for the Evaluation of Educational Achievement (IEA). The reference year is 1998.

Table D7.1. **Ratio of students to computers (1998-1999)**

Ratio of total number of students to total number of computers available for students, and percentage of students using computers in the school, for schools with computers, by level of education

	Primary education				Lower secondary education				Upper secondary education			
	Ratio of total number of students to computers			% of students using computers	Ratio of total number of students to computers			% of students using computers	Ratio of total number of students to computers			% of students using computers
	25th percentile	Mean	75th percentile		25th percentile	Mean	75th percentile		25th percentile	Mean	75th percentile	
Belgium (Fr.)[1]	m	m	m	m	15.6	29.7	36.8	43.0	15.0	33.2	39.7	42.0
Canada[2]	7.0	11.1	14.0	93.0	5.5	8.8	10.9	75.0	5.5	8.0	9.4	77.0
Czech Republic	m	m	m	m	29.5	43.7	54.7	45.0	8.7	17.4	22.8	79.0
Denmark	m	m	m	m	7.8	11.7	13.7	93.0	m	m	m	m
Finland[2]	10.7	16.3	20.6	89.0	8.8	13.5	16.6	86.0	m	m	m	m
Hungary	m	m	m	m	22.4	35.6	41.4	48.0	m	m	m	m
Iceland	13.2	20.5	27.3	84.0	13.1	18.8	22.6	84.0	10.3	17.0	22.3	79.0
Italy[1]	48.1	157.7	211.6	25.0	9.5	30.1	33.7	67.0	8.5	24.4	28.2	68.0
Japan	22.8	58.6	71.8	47.0	12.4	21.4	27.7	67.0	11.6	34.1	37.2	32.0
Luxembourg	m	m	m	m	10.7	15.6	22.0	70.0	9.7	16.3	22.5	72.0
Netherlands	m	27.0	m	m	m	19.5	m	m	m	m	m	m
New Zealand[1]	13.3	20.2	23.5	95.0	7.2	10.3	12.1	79.0	m	m	m	m
Norway	12.3	22.9	26.2	67.0	8.5	13.8	15.7	79.0	3.9	5.8	7.0	85.0

Note: The total number of computers used in the ratio of students to computers excludes computers which are not in use, those only used as servers, and those used by teachers for administration purposes. Graphical calculators and personnally owned computers brought to school by teachers and/or students are also excluded.

1. Country did not satisfy all sampling criteria, secondary education.
2. Country did not satisfy all sampling criteria, primary and secondary education.

Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

Table D7.2. **Computers not in use in schools (1998-1999)**

Percentage of schools where computers are available but not in use, average number of computers available but not in use in these schools and reasons for computers not being used, by level of education, expressed as a percentage of students

	Primary education						Lower secondary education						Upper secondary education					
			Why are they not in use?						Why are they not in use?						Why are they not in use?			
	Percentage of schools where computers are not in use	Average number of computers not in use in these schools	Computers are outdated	Computers are not compatible with other computers	Computers are broken	Teachers/students do not know how to use computers	Percentage of schools where computers are not in use	Average number of computers not in use in these schools	Computers are outdated	Computers are not compatible with other computers	Computers are broken	Teachers/students do not know how to use them	Percentage of schools where computers are not in use	Average number of computers not in use in these schools	Computers are outdated	Computers are not compatible with other computers	Computers are broken	Teachers/students do not know how to use them
Belgium (Fr.)[1]	m	m	m	m	m	m	36	3.1	73	16	42	2	33	2.7	72	15	47	n
Canada[2]	51	3.9	73	27	53	10	61	11	85	25	52	5	58	12.5	84	19	59	2
Czech Republic	m	m	m	m	m	m	26	1	73	16	42	4	29	1.3	73	15	35	3
Denmark	m	m	m	m	m	m	57	3.7	65	13	57	2	m	m	m	m	m	m
Finland[2]	49	1.7	75	16	55	8	73	5.6	84	22	47	4	m	m	m	m	m	m
Hungary	m	m	m	m	m	m	42	2.1	32	8	24	1	m	m	m	m	m	m
Iceland	78	4.1	77	34	33	2	81	5.4	80	30	34	3	54	8.9	100	48	32	n
Italy[1]	35	1.4	75	18	31	9	37	4.7	8.5	12	42	3	53	7.1	81	10	43	3
Japan	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Luxembourg	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
New Zealand[1]	49	1.9	71	22	61	9	68	6.9	76	18	59	6	m	m	m	m	m	m
Norway	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m

Note: The computers which are not in use in schools are excluded from the ratio of students to computers calculated in Table D7.1.
1. Country did not satisfy all sampling criteria, secondary education.
2. Country did not satisfy all sampling criteria, primary and secondary education.
Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

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Table D7.3. **Use of the Internet in schools (1998-1999)**

Percentage of schools which have access or intend to have access to the Internet for instructional purposes, by level of education, expressed as a percentage of students

	Primary education					Lower secondary education					Upper secondary education				
	Access to the Internet	Access to the Internet planned before 2001	Access to the Internet not before 2001	% of computers that can also access e-mail	% of computers that can also access the World Wide Web	Access to the Internet	Access to the Internet planned before 2001	Access to the Internet not planned before 2001	% of computers that can also access e-mail	% of computers that can also access the World Wide Web	Access to the Internet	Access to the Internet planned before 2001	Access to the Internet not planned before 2001	% of computers that can also access e-mail	% of computers that can also access the World Wide Web
Belgium (Fr.)[1]	m	m	m	m	m	41	44	15	33	36	59	31	10	30	32
Canada[2]	88	8	4	51	55	98	2	n	55	61	97	2	1	50	57
Czech Republic	m	m	m	m	m	33	39	28	39	40	68	25	7	37	38
Denmark	m	m	m	m	m	85	14	1	39	43	m	m	m	m	m
Finland[2]	87	11	2	56	59	96	4	1	67	71	m	m	m	m	m
Hungary	m	m	m	m	m	41	24	35	46	45	m	m	m	m	m
Iceland	98	2	n	55	58	100	n	n	67	71	100	n	n	91	81
Italy[1]	28	71	n	24	24	73	27	n	16	18	73	26	1	16	18
Japan	69	4	28	24	32	58	6	36	14	20	50	4	45	23	24
Luxembourg	m	m	m	m	m	79	21	n	35	50	76	24	n	38	51
New Zealand[1]	77	17	6	21	21	89	10	1	39	32	m	m	m	m	m
Norway	56	34	10	20	21	81	16	3	38	41	98	1	n	64	66

1. Country did not satisfy all sampling criteria, secondary education.
2. Country did not satisfy all sampling criteria, primary and secondary education.

Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

Table D7.4*a*. **Availability of peripheral equipment in schools (1998-1999)**

Percentage of schools possessing laser or colour printers, CD-ROM *drives and* CD *writers, by level of education, expressed as a percentage of students*

	Laser printer			Colour printer			CD-ROM drive			CD writer (CD-R, DVD)		
	Primary education	Lower secondary education	Upper secondary education	Primary education	Lower secondary education	Upper secondary education	Primary education	Lower secondary education	Upper secondary education	Primary education	Lower secondary education	Upper secondary education
Belgium (Fr.)[1]	m	29	50	m	49	54	m	70	86	m	4	6
Canada[2]	79	91	97	65	65	77	97	95	98	4	19	33
Czech Republic	m	31	79	m	51	70	m	79	90	m	3	15
Denmark	m	96	m	m	78	m	m	98	m	m	21	m
Finland[2]	79	99	m	73	87	m	98	98	m	7	19	m
Hungary	m	35	m	m	48	m	m	88	m	m	4	m
Iceland	80	86	100	65	70	60	89	93	95	2	1	25
Italy[1]	20	55	63	73	77	85	76	89	92	26	42	56
Japan	38	63	84	71	76	66	68	79	87	5	12	21
Luxembourg	m	100	94	m	86	84	m	100	98	m	34	35
New Zealand[1]	33	92	m	91	66	m	98	94	m	6	10	m
Norway	58	82	96	72	72	77	86	89	92	2	6	30

1. Country did not satisfy all sampling criteria, secondary education.
2. Country did not satisfy all sampling criteria, primary and secondary education.

Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

Table D7.4*b*. **Availability of devices for mentally and/or physically disabled students in schools (1998-1999)**

Percentage of schools possessing devices for mentally and/or physically disabled students, by level of education, expressed as a percentage of students

	Primary education	Lower secondary education	Upper secondary education
Belgium (Fr.)[1]	m	2	n
Canada[2]	16	22	26
Czech Republic	m	2	1
Denmark	m	9	m
Finland[2]	13	8	m
Hungary	m	2	m
Iceland	16	15	26
Italy[1]	16	15	17
Japan	n	4	n
Luxembourg	m	n	n
New Zealand[1]	21	16	m
Norway	34	28	37

1. Country did not satisfy all sampling criteria, secondary education.
2. Country did not satisfy all sampling criteria, primary and secondary education.

Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

Table D7.4*c*. **Availability of presentation equipment in schools (1998-1999)**

Percentage of schools possessing presentation equipment, by level of education, expressed as a percentage of students

	Devices for digital image or video processing			Graphic tablet			Video projector			Scanner			Liquid crystal display (LCD) panel		
	Primary education	Lower secondary education	Upper secondary education	Primary education	Lower secondary education	Upper secondary education	Primary education	Lower secondary education	Upper secondary education	Primary education	Lower secondary education	Upper secondary education	Primary education	Lower secondary education	Upper secondary education
Belgium (Fr.)[1]	m	10	9	m	6	6	m	15	17	m	36	46	m	10	16
Canada[2]	33	55	74	1	11	17	17	48	54	47	67	83	13	28	34
Czech Republic	m	3	11	m	1	11	m	10	27	m	27	70	m	7	24
Denmark	m	65	m	m	2	m	m	18	m	m	94	m	m	7	m
Finland[2]	25	43	m	2	3	m	9	19	m	58	91	m	1	4	m
Hungary	m	9	m	m	n	m	m	3	m	m	41	m	m	3	m
Iceland	23	24	25	n	n	n	77	75	71	65	74	70	1	1	n
Italy[1]	29	36	48	7	15	24	13	55	61	66	74	84	4	21	20
Japan	30	43	35	9	14	6	32	50	43	57	70	66	4	6	5
Luxembourg	m	45	41	m	39	36	m	94	91	m	100	94	m	74	74
New Zealand[1]	48	53	m	1	10	m	12	29	m	52	74	m	1	9	m
Norway	15	26	43	4	2	23	6	21	66	37	65	85	3	12	62

1. Country did not satisfy all sampling criteria, secondary education.
2. Country did not satisfy all sampling criteria, primary and secondary education.

Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

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Table D7.5. **Availability of software in schools (1998-1999)**

Percentage of schools possessing particular type of software, by level of education, expressed as a percentage of students

	Drill and practice programmes		Educational games		Internet browser		Encyclopaedia on CD-ROM		Presentation software (*e.g.*, Power Point)	
	Lower secondary education	Upper secondary education	Lower secondary education	Upper secondary education	Lower secondary education	Upper secondary education	Lower secondary education	Upper secondary education	Lower secondary education	Upper secondary education
Belgium (Fr.)[1]	61	32	26	19	45	71	44	54	34	61
Canada[1]	68	71	55	54	94	95	90	96	79	89
Czech Republic	65	45	64	31	39	71	42	58	32	72
Denmark	89	m	76	m	85	m	90	m	59	m
Finland[1]	51	m	60	m	97	m	84	m	66	m
Hungary	39	m	45	m	50	m	38	m	61	m
Iceland	80	51	91	31	96	98	53	75	91	94
Italy[1]	38	37	14	17	54	63	51	51	57	69
Japan	54	26	38	17	39	42	43	29	28	32
Luxembourg	25	24	21	20	87	91	81	79	73	94
New Zealand[1]	61	m	69	m	82	m	96	m	77	m
Norway	89	82	87	42	70	92	85	84	79	97

1. Country did not satisfy all sampling criteria.

Source: International Association for the Evaluation of Educational Achievement (IEA)/SITES.

INDIVIDUAL, SOCIAL AND LABOUR MARKET OUTCOMES OF EDUCATION

E

Investment in education is one of the recognised means of achieving high rates of employment, economic growth and social progress. Education has two important effects on economic productivity. First, education can contribute to the development of knowledge, which translates into technological improvements and aggregate productivity gains. Second, education can increase the skills and knowledge of individual workers, allowing them to accomplish particular tasks better and to adapt more easily to changing job requirements. In a free labour market, the success of an education system manifests itself among other things in the success of the individual in finding and holding a job, as well as in the level of wages that employers are willing to pay for the skills which the individual has. The adequacy of workers' skills and the capacity of the labour market to supply jobs that match those skills are important issues for policy-makers. This chapter examines some of these interrelationships.

In recent decades, OECD countries have been witnessing an increasing demand for individuals with upper secondary and tertiary qualifications. In most countries, education policy seeks to encourage young people to complete at least upper secondary education. This development foreshadows an increasing risk of exclusion for those individuals who have not attained at least an upper secondary qualification. **Indicator E1** sheds light on this by examining labour force participation rates and the unemployment rates of groups with different levels of education. As there are consistent differences in labour market conditions for different age cohorts and the genders, these are given specific attention.

The transition from school to work is a critical period for young people, when the knowledge and skills learned in formal education are evaluated by the labour market. The extent to which learning at school or university translates into workplace skills and performance, and the work habits acquired at this stage, have a considerable effect on social integration and future labour-force activity and earnings. Indicators E2, E3, and E4 examine the labour force characteristics of young people in the 15 to 19-year-old, the 20 to 24-year-old, and the 25 to 29-year-old cohorts.

On the basis of the current situation of persons between the ages of 15 and 29, **indicator E2** provides a picture of the major trends affecting the transition from school to work. On the assumption that conditions in education systems and labour markets remain unchanged over the next 15 years, it is possible to extrapolate the average number of years that today's 15-year-olds can expect to spend in various types of educational and employment situations. It is in the average duration of spells of unemployment when young people first enter the labour market which varies most between countries.

Indicator E3 examines the education and employment status of young men and women in a number of OECD countries, in the age groups 15 to 19, 20 to 24 and 25 to 29, and the overall situation for all young people aged 15 to 29. Since jobs on offer in the labour market require increasing levels of skill, persons with low attainment are often severely penalised in the labour market. Despite progress in attainment levels, many young people are unemployed. Differences in unemployment rates by level of èducational attainment are an indicator of the degree to which further education improves young people's economic opportunities.

In certain countries, education and work take place largely consecutively, while in other countries they may occur concurrently. Various patterns of education combined with work can have significant effects on the success of the transition process. Working during education can occur in the context of work-study programmes or in the form of part-time jobs for out-of-school hours. As young people grow older, fewer remain in education, and fewer hence combine it with work.

Indicator E4 focuses on specific forms of employment sought by and available for young people. First, proportions in part-time and full-time employment are compared by age and gender. Then, proportions of young people employed under permanent contracts versus those in temporary jobs are compared by age group and gender. In order to assess the true scale of youth unemployment, a distinction is made in both types of comparison between those in education and those who have left school. The data show that part-time employment is favoured by the youngest age group, who are mostly still in education (combining work and study) and by women. They also show that countries differ widely in the availability of part-time jobs. There is evidence that young people appear to be given temporary contracts more frequently than older employees, which may be seen as an adjustment strategy or a mutual trial period for both employee and employer. While there has been a significant increase in the length of time spent in education, a significant proportion of young people – particularly early school-leavers – are still threatened with exclusion because they are neither in education nor at work, *i.e.*, they are unemployed or in non-employment. The non-employment of younger age groups is a particular cause for concern, since those who have neither employed nor unemployed status do not benefit from any welfare cover.

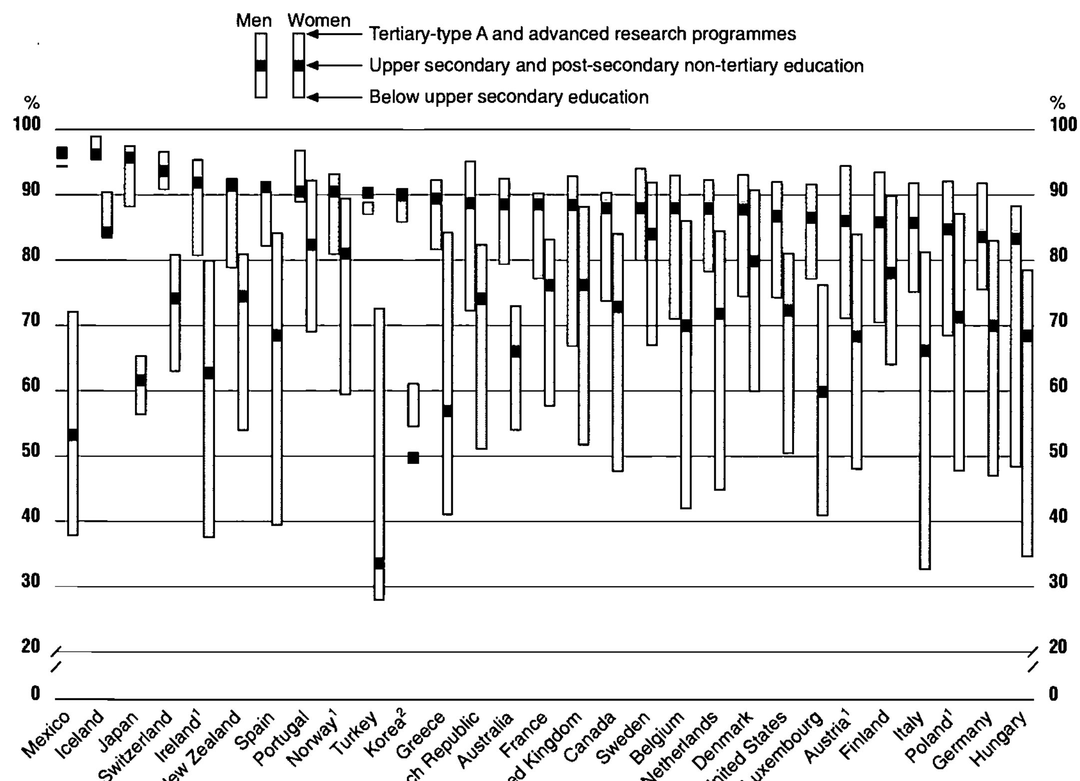
Families and individuals also make sustained personal investments in education, thereby increasing educational standards in succeeding generations. One way in which markets supply incentives for workers to develop and maintain appropriate levels of skills is through wage differentials, in particular through the enhanced earnings accorded to persons completing additional education. The economic benefit of completing tertiary education can be seen by comparing the ratio of the mean annual earnings of those who attended and graduated from tertiary education with the mean annual earnings of upper secondary and post-secondary non-tertiary graduates. **Indicator E5** shows the earnings of workers with different levels of educational attainment

LABOUR FORCE PARTICIPATION BY LEVEL OF EDUCATIONAL ATTAINMENT

- Labour force participation rates rise with educational attainment in most OECD countries. With very few exceptions, the participation rate for graduates of higher education is markedly higher than that for upper secondary graduates. The gap in male participation rates is particularly wide between upper secondary graduates and those without an upper secondary qualification.
- The labour force participation rate for women with less than upper secondary attainment is particularly low. Rates for women with tertiary attainment approach or exceed 80 per cent in all but four countries, but remain below those of men in all countries except one.
- The gender gap in labour force participation decreases with increasing educational attainment. Although a gender gap in labour force participation remains among those with the highest educational attainment, the gap is much narrower than among those with lower qualifications.

Chart E1.1. **Labour force participation rates (1999)**

By level of educational attainment and gender for the population 25 to 64 years of age



1. Year of reference 1998.
2. The labour force participation rate is higher for individuals with less than upper secondary education than for those with tertiary-type A and advanced research programmes. This is indicated by white bars.

Countries are ranked in descending order of the labour force participation rates for men with upper secondary and post-secondary non-tertiary educational attainment.

Source: OECD. Table E1.1.

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POLICY CONTEXT

This indicator examines the relationship between educational attainment and labour-market status.

OECD economies and labour markets are becoming increasingly dependent on a stable supply of well-educated workers to further their economic development and to maintain their competitiveness. As levels of skill tend to rise with educational attainment, the costs incurred when those with higher levels of education do not work also rise; and as populations in OECD countries age, higher and longer participation in the labour force can lower dependency ratios and help to alleviate the burden of financing public pensions.

This indicator examines the relationship between educational attainment and labour force activity, comparing rates of participation in the labour force first, and then rates of unemployment. The adequacy of workers' skills and the capacity of the labour market to supply jobs that match those skills are important issues for policy-makers.

EVIDENCE AND EXPLANATIONS

Labour force participation

Labour force participation rates for men vary less between countries than those for women.

Variation between countries in participation by women is a primary factor in the differences in overall participation rates between OECD countries. The overall labour force participation rates for men aged 25 to 64 range from 81 per cent or less in Hungary and Italy to 90 per cent and above in Iceland, Japan, Mexico, Norway, Portugal and Switzerland. By contrast, labour force participation among women ranges from 50 per cent or less in Italy, Mexico and Turkey, to over 75 per cent in the Nordic countries (Table E1.1). Prolonged education and non-employment are two factors which contribute to these disparities, generally increasing the number of people not in the labour force.

Labour force participation rates for men rise with educational attainment in most OECD countries.

Labour force participation rates for men are generally higher among those with higher educational qualifications. With the exception of Mexico, Spain and Turkey, where the trend is less pronounced, the participation rate for graduates of higher education is markedly higher than that for upper secondary graduates. The difference ranges from a few percentage points to between 8 and 9 per cent in Austria, Finland, Germany and Poland. It is very small between the ages of 35 and 44, when most people are in employment, and stems mainly from the fact that the less skilled leave the labour market earlier. After 55, those with higher educational attainment tend to remain in employment longer than others (Tables E1.1 and E1.2).

The gap in male participation rates is particularly wide between those with and without an upper secondary qualification.

The gap in participation rates of 25 to 64 year old males is particularly wide among the age group 25 to 64 years between upper secondary graduates and those who have not completed an upper secondary qualification. In 14 out of 29 OECD countries, the difference in the rate of participation between upper secondary graduates and those without such a qualification exceeds ten percentage points. The most extreme case is Hungary, where only half of the male population without upper secondary education, but over 80 per cent with such attainment, participate in the labour force. The gap in participation rates between men with low and high educational attainment is small in Iceland, Korea, Mexico, Portugal, Switzerland and Turkey (where participation is generally high at all levels of educational attainment).

Among women, the difference in labour force participation by level of educational attainment is even wider.

Labour force participation rates for women aged 25 to 64 years show yet more marked differences, not only between those with below upper secondary and those with upper secondary attainment (around 20 percentage points or more in 16 out of 29 OECD countries) but also between those with upper secondary and those with tertiary attainment (around 10 percentage points or more in 19 countries). Particular exceptions are France, Iceland, Japan, Korea, New Zealand and Switzerland, where participation rates for women with upper secondary qualifications approach those for women with a tertiary qualification (a difference of around 5 to 7 percentage points).

Labour force participation among women with qualifications below upper secondary is particularly low.

Participation rates for women with less than upper secondary attainment are particularly low, averaging about 50 per cent over all OECD countries and around one-third or below in Hungary, Italy and Turkey. Rates for women with tertiary attainment approach or exceed 80 per cent everywhere except Japan, Korea, Mexico and Turkey, but remain below those of men in all countries (Chart E1.1).

The gender gap in labour force participation decreases with increasing educational attainment.

Although the gender gap in labour force participation remains among those with the highest educational attainment, the gap is much narrower than among those with lower qualifications. On average across OECD countries, with each additional level attained, the difference between the participation of men and women decreases by 10 percentage points: from about 30 percentage points at below upper secondary level, to 20 percentage points at upper secondary and 10 at tertiary level.

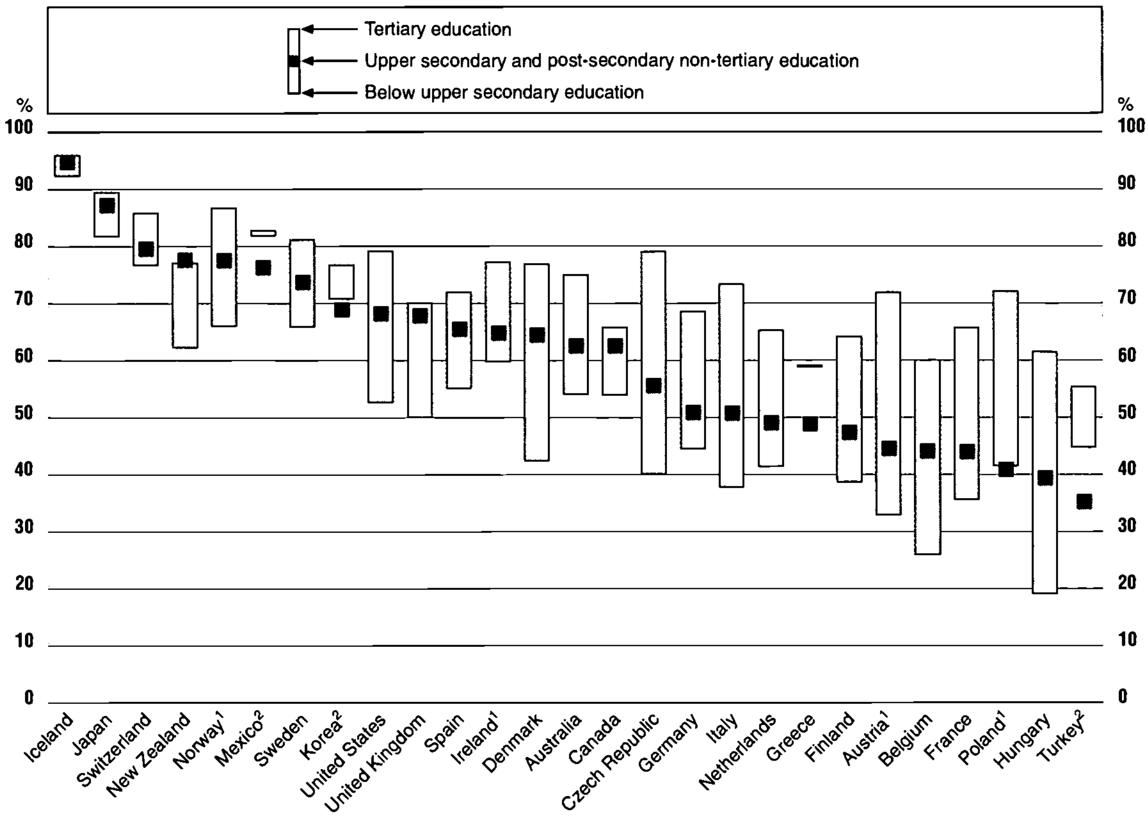
The education gap in male participation in the labour force is strongly influenced by differences among the older population.

Much of the overall gap between the labour force participation rates of men with differing educational attainment is explained by larger differences in the older populations, particularly among men between the ages of 55 and 64 (Table E1.1 and Chart E1.2). More than 70 per cent of 55 to 64-year-olds with a tertiary-level qualification are active in the labour force in 20 out of 29 countries. Only Greece, Korea, Mexico and Turkey have participation rates as high among those who have not completed upper secondary education. By contrast, the education gap in female labour force participation is relatively wide in all age groups.

The patterns observed here reflect a number of underlying causes. Since earnings tend to increase with educational attainment, the monetary incentive to participate is greater for individuals with higher qualifications. In addition, those individuals generally work on more interesting and stimulating tasks, and hold functions of higher responsibility, which increases their motivation to remain in the labour force. Conversely, hard physical work, generally associated with rather low levels of education, can lead to a need for early retirement. Moreover, industrial restructuring in many countries has reduced job opportunities for unskilled workers, or workers who had been trained for particular skills outdated by new technologies. A sizeable number of these people have left the labour market either through early retirement schemes or because there are only limited job opportunities. The educational attainment of women and their participation rates in the labour market have historically been lower than those of men, and in spite of considerable advances over the last few decades, current participation rates continue to show the impact of these historical factors.

Chart E1.2. **Labour force participation rates of men (1999)**

By level of educational attainment for the population 55 to 64 years of age



1. Year of reference 1998.
2. The labour force participation rates for 55 to 64-year-olds are higher for individuals with less than upper secondary than for those with tertiary education. This is indicated by white bars.

Countries are ranked in descending order of the labour force participation rate 55 to 64-year-olds with upper secondary and post-secondary non-tertiary educational attainment.

Source: OECD. Table E1.1.

Unemployment rates by level of educational attainment

Those with low educational attainment are both less likely to be labour force participants and more likely to be unemployed.

The unemployment rate is a measure of a particular economy's ability to supply a job to everyone who wants one. To the extent that educational attainment is assumed to be an indicator of skill, it can signal to employers the potential knowledge, capacities and workplace performance of candidates for employment. The employment prospects of individuals of varying educational attainment will depend both on the requirements of labour markets and on the supply of workers with differing skills. Those with low educational qualifications are at particular risk of economic marginalisation since they are both less likely to be labour force participants and more likely to be without a job if they are actively seeking one.

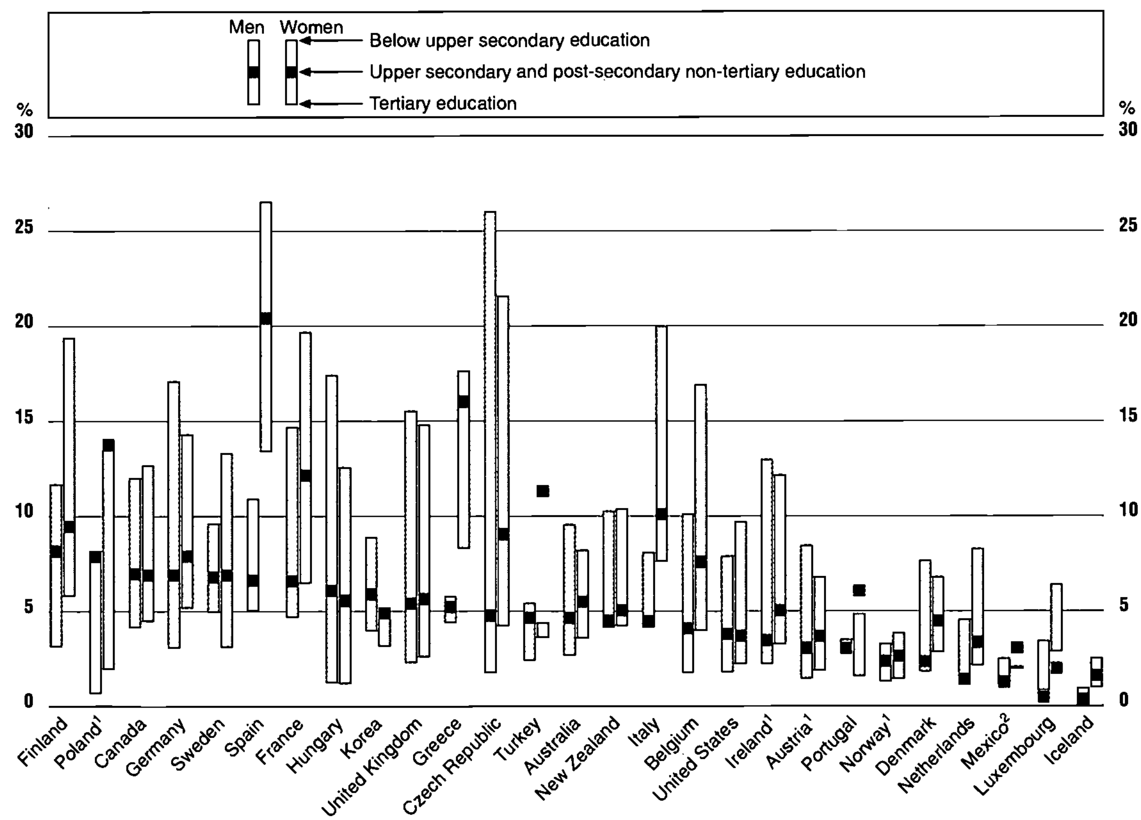
In 18 out of 29 OECD countries, male labour force participants aged 25-64 with a qualification below upper secondary education are more than 1.5 times as likely to be unemployed as their counterparts who have completed upper secondary education. In a similar proportion of countries, the unemployment rate for male upper secondary graduates is at least 1.5 times the unemployment rate among tertiary graduates. At the tertiary level, in 12 countries out of 21, completion of shorter vocationally-oriented programmes (ISCED 5B) is associated with unemployment rates for the adult population which are at least 20 per cent higher than those for graduates of more theoretical, longer programmes at ISCED level 5A (Table E1.2).

Unemployment rates fall with higher educational attainment.

In most countries, the disparities in unemployment rates between levels of educational attainment are particularly strong among men between 30 and 44 years of age. The association between unemployment rates and educational attainment is similar among women, although the gap between upper secondary and tertiary attainment is even wider in many countries (Chart E1.3).

Chart E1.3. **Unemployment rates (1999)**

By level of educational attainment and gender for the population 30 to 44 years of age



1. Year of reference 1998.
2. The unemployment rate for men is higher for individuals with tertiary education than for those with less than upper secondary education. This is indicated by white bars.

Countries are ranked in descending order of the unemployment rates for men with upper secondary and post-secondary non-tertiary educational attainment.

Source: OECD. Table E1.2.

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A number of factors contribute to the variation between countries in the association between unemployment rates and educational attainment.

The wide variation between countries in unemployment rates observed among those with low educational attainment is attributable to a number of factors. In some countries (especially Finland and Spain), the high unemployment rates of the poorly educated reflect generally difficult labour market conditions, which affect these individuals in particular. Unemployment rates among those without an upper secondary qualification are also relatively high in some countries where labour markets are less regulated (Canada, the United Kingdom and the United States), although not in others (Australia and New Zealand). On the other hand, in countries where agriculture is still an important sector of employment (Greece, Korea, Portugal and Turkey), unemployment rates of persons without upper secondary education tend to be low. Finally, where overall labour market conditions are particularly favourable (Austria, Iceland, Luxembourg and Norway), jobs appear to be available for workers with low as well as high educational attainment (Table E1.2).

DEFINITIONS AND METHODOLOGIES

Data are derived from national labour force surveys.

The labour force participation rate for a particular age group is equal to the percentage of individuals in the population of the same age group who are either employed or unemployed, these terms being defined according to the guidelines of the International Labour Office (ILO).

The unemployed are defined as individuals who are without work, actively seeking employment and currently available to start work. The employed are defined as those who during the survey reference week: *i)* work for pay (employees) or profit (self-employed and unpaid family workers) for at least one hour; or *ii)* have a job but are temporarily not at work (through injury, illness, holiday or vacation, strike or lock-out, educational or training leave, maternity or parental leave, etc.) and have a formal attachment to their job.

The unemployment rate is the number of unemployed persons divided by the number of labour force participants (expressed as a percentage). The level of educational attainment is based on the definitions of ISCED-97.

Table E1.1. **Labour force participation rates (1999)**

By level of educational attainment and gender for populations 25 to 64 and 55 to 64 years of age

		Ages 25-64					Ages 55-64			
		Below upper secondary education	Upper secondary and post-secondary non-tertiary education	Tertiary-type B	Tertiary-type A and advanced research programmes	All levels of education	Below upper secondary education	Upper secondary and post-secondary non-tertiary education	Tertiary education	All levels of education
Australia	Men	79	89	91	93	86	54	63	75	61
	Women	54	66	81	73	63	26	35	51	32
Austria[1]	Men	71	86	89	94	84	33	44	72	43
	Women	48	68	82	84	63	15	20	38	18
Belgium	Men	71	88	92	93	82	26	44	60	35
	Women	42	70	84	86	62	12	23	31	17
Canada	Men	74	88	91	90	86	54	62	66	60
	Women	48	73	80	84	72	27	43	51	39
Czech Republic	Men	72	89	x(5A/6)	95	88	40	55	79	56
	Women	51	74	x(5A/6)	82	70	12	27	61	24
Denmark	Men	74	88	93	93	87	42	64	77	62
	Women	60	80	88	91	77	36	57	68	51
Finland	Men	70	86	88	93	83	39	47	64	46
	Women	64	78	86	90	77	37	43	59	43
France	Men	77	89	92	90	85	36	44	66	43
	Women	58	76	84	83	70	28	35	50	32
Germany	Men	76	84	88	92	84	45	51	69	54
	Women	47	70	82	83	66	26	37	55	34
Greece	Men	82	89	87	92	86	59	49	59	57
	Women	41	57	81	84	53	25	16	32	24
Hungary	Men	48	83	a	88	74	19	39	61	31
	Women	35	68	a	79	57	7	16	34	11
Iceland	Men	96	96	99	99	97	92	95	96	94
	Women	84	84	98	90	86	77	81	100	80
Ireland[1]	Men	81	92	93	95	87	60	65	77	63
	Women	38	63	81	80	55	19	30	53	25
Italy	Men	75	86	x(5A/6)	92	81	38	51	73	43
	Women	33	66	x(5A/6)	81	48	13	28	42	16
Japan	Men	88	96	97	98	95	82	87	89	86
	Women	56	62	64	65	61	48	47	49	48
Korea	Men	86	90	95	91	89	77	69	71	74
	Women	61	50	55	54	55	52	29	39	49
Luxembourg	Men	77	87	90	92	84	21	38	73	37
	Women	41	60	81	76	54	13	21	51	18
Mexico	Men	94	96	98	94	94	83	76	82	83
	Women	38	53	65	72	43	29	28	52	29
Netherlands	Men	78	88	91	92	86	41	49	65	50
	Women	45	72	83	84	64	18	26	43	23
New Zealand	Men	79	91	89	92	88	62	78	77	72
	Women	54	74	77	81	70	36	58	61	49
Norway[1]	Men	81	90	98	93	90	66	77	87	76
	Women	59	81	93	89	80	44	65	86	61
Poland[1]	Men	69	85	x(5A/6)	92	82	42	41	72	45
	Women	48	71	x(5A/6)	87	68	23	24	49	26
Portugal	Men	89	91	93	97	90	66	m	74	67
	Women	69	82	88	92	73	42	m	54	43
Spain	Men	82	91	93	90	86	55	65	72	58
	Women	39	68	78	84	52	19	39	52	21
Sweden	Men	80	88	88	94	87	66	74	81	73
	Women	67	84	86	92	81	54	68	78	65
Switzerland	Men	91	94	96	97	94	77	80	86	81
	Women	63	74	88	81	73	47	55	70	53
Turkey	Men	87	90	x(5A/6)	89	88	55	35	45	53
	Women	28	34	x(5A/6)	73	31	25	6	27	24
United Kingdom	Men	67	88	92	93	86	50	68	70	63
	Women	52	76	86	88	74	45	62	68	55
United States	Men	74	87	90	92	87	53	68	79	69
	Women	50	72	82	81	73	33	53	63	52
Country mean	**Men**	**76**	**86**	**89**	**90**	**84**	**51**	**58**	**71**	**58**
	Women	**49**	**67**	**78**	**79**	**62**	**30**	**37**	**52**	**36**

1. Year of reference 1998.
Source: OECD. See notes on indicator A2 in Annex 3.

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Table E1.2. **Unemployment rates (1999)**

By level of educational attainment and gender for populations 25 to 64 and 30 to 44 years of age

		Ages 25-64					Ages 30-44			
		Below upper secondary education	Upper secondary and post-secondary non-tertiary education	Tertiary-type B	Tertiary-type A and advanced research programmes	All levels of education	Below upper secondary education	Upper secondary and post-secondary non-tertiary education	Tertiary education	All levels of education
Australia	Men	9.2	5.2	5.0	2.9	6.1	9.6	4.6	2.7	5.7
	Women	7.6	4.9	4.6	2.4	5.4	8.2	5.5	3.6	6.0
Austria[1]	Men	8.0	3.4	1.7	1.9	3.9	8.4	3.1	1.5	3.6
	Women	6.0	4.0	2.1	2.3	4.3	6.8	3.7	1.9	4.1
Belgium	Men	10.0	4.6	2.6	2.0	6.0	10.1	4.1	1.8	5.6
	Women	15.6	8.3	3.6	4.4	8.8	16.9	7.6	4.0	8.7
Canada	Men	10.7	6.7	4.4	3.9	6.4	12.0	7.0	4.2	6.6
	Women	10.3	6.5	4.5	4.1	6.0	12.7	6.9	4.5	6.4
Czech Republic	Men	20.0	5.0	x(5A/6)	2.1	5.7	26.0	4.8	1.8	5.7
	Women	18.0	8.4	x(5A/6)	3.4	9.2	21.6	9.1	4.3	10.0
Denmark	Men	6.8	3.3	2.4	3.1	3.6	7.6	2.4	1.8	3.1
	Women	7.2	5.1	2.7	6.7	5.0	6.8	4.5	2.9	4.3
Finland	Men	12.0	9.3	3.7	2.9	8.1	11.7	8.2	3.2	7.2
	Women	14.4	9.8	7.0	4.3	9.3	19.4	9.5	5.8	9.2
France	Men	14.1	7.2	5.7	5.0	9.0	14.7	6.6	4.7	8.5
	Women	16.7	12.0	6.6	7.6	12.3	19.7	12.2	6.5	12.8
Germany	Men	17.7	8.4	4.9	4.3	8.4	17.1	6.9	3.1	7.0
	Women	14.1	9.4	7.0	5.1	9.5	14.3	7.9	5.2	8.0
Greece	Men	5.5	6.6	6.6	4.8	5.9	5.8	5.2	4.4	5.2
	Women	13.7	17.3	10.3	10.3	14.1	17.6	16.0	8.3	14.3
Hungary	Men	12.6	6.0	a	1.5	6.5	17.4	6.1	1.3	7.2
	Women	9.5	5.2	a	1.1	5.4	12.6	5.6	1.2	6.1
Iceland	Men	1.6	0.5	n	0.2	0.7	0.9	0.4	n	0.4
	Women	2.8	1.9	1.3	1.0	2.1	2.5	1.6	1.0	1.8
Ireland[1]	Men	11.7	4.2	2.5	2.9	7.4	13.0	3.5	2.2	7.3
	Women	11.4	4.8	3.0	3.9	6.5	12.2	5.0	3.3	6.5
Italy	Men	7.8	5.7	x(5A/6)	4.9	6.7	8.1	4.5	4.2	6.2
	Women	16.6	11.1	x(5A/6)	9.3	13.0	20.0	10.1	7.6	13.1
Japan	Men	6.4	4.5	4.1	2.3	4.2	m	m	m	m
	Women	4.3	4.2	4.9	3.1	4.3	m	m	m	m
Korea	Men	7.6	7.0	6.8	4.6	6.6	8.9	5.9	4.0	5.7
	Women	3.5	5.0	4.9	2.9	4.1	4.7	4.9	3.2	4.6
Luxembourg	Men	2.8	0.8	n	0.8	1.4	3.4	0.5	0.9	1.4
	Women	5.0	1.7	2.3	1.3	2.8	6.4	2.0	2.9	3.5
Mexico	Men	1.3	0.9	5.2	2.7	1.5	1.3	1.3	2.5	1.5
	Women	1.6	2.5	2.6	3.1	1.9	2.1	3.1	2.0	2.2
Netherlands	Men	3.6	1.4	1.3	1.5	2.1	4.5	1.4	1.2	2.2
	Women	6.7	3.6	1.7	2.1	4.1	8.3	3.4	2.2	4.2
New Zealand	Men	9.2	4.5	5.5	3.7	5.5	10.3	4.5	4.2	5.6
	Women	8.3	4.8	3.7	3.8	5.2	10.4	5.0	4.3	5.8
Norway[1]	Men	3.4	2.2	1.6	1.6	2.2	3.3	2.4	1.3	2.1
	Women	2.4	2.5	1.2	1.4	2.1	3.8	2.6	1.5	2.3
Poland[1]	Men	12.7	7.2	x(5A/6)	2.2	7.5	8.1	7.9	0.7	7.3
	Women	15.1	11.5	x(5A/6)	2.8	10.8	13.5	13.8	2.0	12.0
Portugal	Men	3.9	4.1	2.4	3.1	3.8	3.5	3.0	3.3	3.4
	Women	4.6	6.2	1.4	2.4	4.5	4.8	6.1	1.6	4.6
Spain	Men	10.5	7.8	6.8	6.9	9.2	10.9	6.6	5.1	8.6
	Women	22.8	19.8	20.6	14.6	20.1	26.5	20.4	13.4	20.9
Sweden	Men	8.5	6.7	5.6	3.8	6.5	9.6	6.8	5.0	6.7
	Women	9.7	6.3	3.8	2.2	5.8	13.3	6.9	3.2	6.4
Switzerland	Men	4.1	2.3	x(5A/6)	1.3	2.2	m	2.2	m	2.1
	Women	5.7	2.4	x(5A/6)	2.9	3.1	m	3.1	m	3.5
Turkey	Men	5.6	6.7	x(5A/6)	4.6	5.7	5.4	4.7	2.4	5.0
	Women	4.5	14.2	x(5A/6)	5.9	5.9	4.4	11.3	3.6	5.2
United Kingdom	Men	12.7	5.3	3.8	2.6	5.5	15.5	5.4	2.3	5.2
	Women	7.3	4.1	1.8	2.7	4.1	14.8	5.6	2.6	4.5
United States	Men	7.0	3.9	2.6	2.0	3.5	7.9	3.8	1.8	3.5
	Women	8.8	3.6	2.9	1.9	3.5	9.7	3.7	2.2	3.6
Country mean	**Men**	**8.2**	**4.7**	**3.6**	**2.9**	**5.1**	**9.1**	**4.3**	**3.0**	**4.6**
	Women	**9.1**	**6.7**	**4.4**	**4.0**	**6.4**	**11.2**	**6.8**	**4.2**	**6.4**

1. Year of reference 1998.

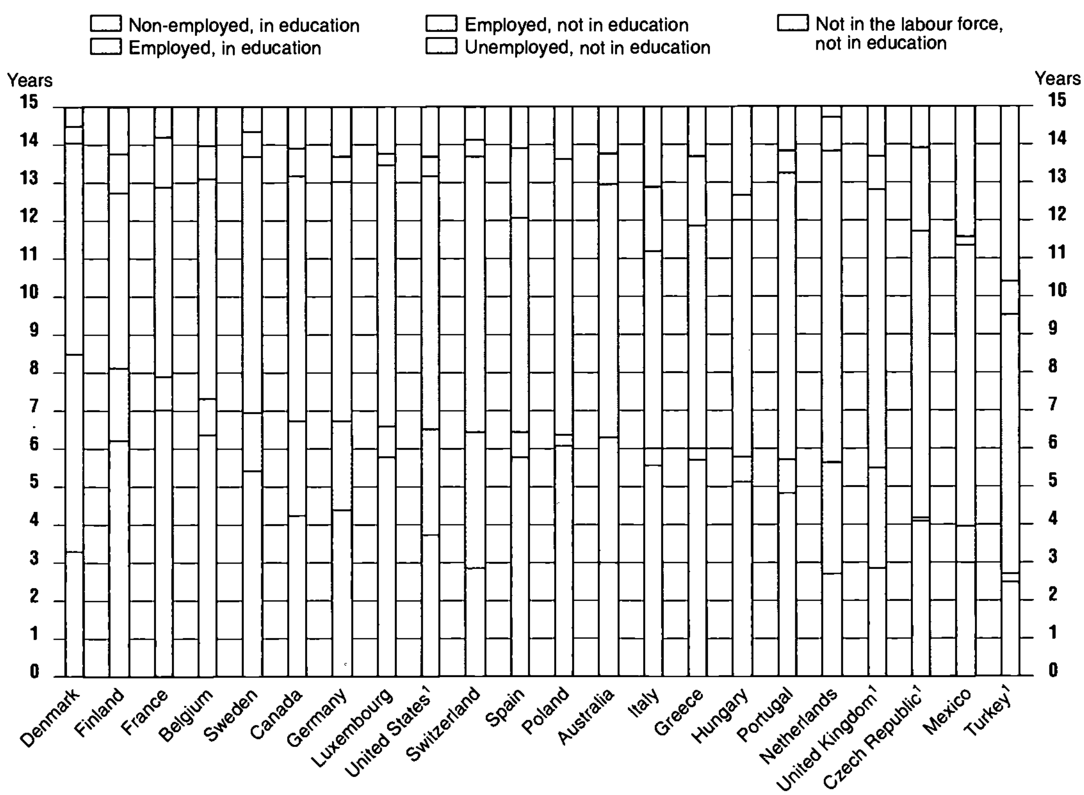
Source: OECD. See notes on indicator A2 in Annex 3.

EXPECTED YEARS IN EDUCATION, EMPLOYMENT AND NON-EMPLOYMENT BETWEEN THE AGES OF 15 AND 29

- On average, a young person aged 15 in 1999 can expect to be in education for a little over six years. In 11 of the 22 countries studied, the figure ranges from six to seven years.
- A young person aged 15 can expect to hold a job for 6.4 of the 15 years to come, to be unemployed for a total of one year and to be out of the labour market for 1.4 years. It is in the average duration of spells of unemployment that countries vary most, which reflects differences in youth employment rates.
- In absolute terms, young people today can expect to spend less time in unemployment after completing their initial education than they could ten years ago.

Chart E2.1. **Expected years in education and not in education for the youth population (1999)**

By gender and work status for the population 15 to 29 years of age



1. Year of reference 1998.

Countries are ranked in descending order of the expected years in education of the youth population.

Source: OECD. Table E2.1.

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POLICY CONTEXT

The past decade has seen young people spending longer in initial education, with the result that they delay their entry into the world of work (see the 1998 edition of *Education at a Glance*). Some of this additional time is spent combining work and education, a practice that is widespread in some countries. Once young people have completed their education, access to the labour market is often impeded by spells of unemployment or non-employment, although this situation affects men and women differently. In absolute terms, however, young people today can expect to spend less time in unemployment after completion of initial education than they could ten years ago.

EVIDENCE AND EXPLANATIONS

On the basis of the current situation of persons between the ages of 15 and 29, this indicator gives a picture of the major trends affecting the transition from school to work.

Today, on average, a 15-year-old can expect to be in the education system for about another six years.

On average, a young person aged 15 in 1999 can expect to be in education for a little over six years (Table E2.1). Between 1985 and 1996, this figure rose by almost 1.5 years. Since 1996, the overall increase has been slower. Countries where young people used to spend relatively little time in education have made up some ground, whereas those in which they stayed in education longest are now recording little increase.

In 11 of the 22 countries studied, expected years in education at the age of 15 range from six to seven years. There is, however, a gap of around three years separating the two extreme groups: Belgium, Denmark, Finland and France (7.9 years on average) on the one hand and the Czech Republic, Hungary, Mexico and Turkey (four years on average) on the other.

The average overall figure is marginally higher for women (6.3 compared with 6.1 years). In many countries, the figures are about the same, but Turkey stands out as an exception, with only 2.1 years of expected education for young women aged 15 years. At the other end of the scale, a longer average period of education often goes hand in hand with a higher figure for women (Table E2.1).

The figure for expected years of education covers some very different combinations of education and work.

The figure for expected years of education covers some very different combinations of education and work. Employment combined with education includes work-study programmes and part-time jobs. While such combinations are rare in half of the countries studied, in the other half they account for between one and four of the additional six to seven years that young people expect to spend in education.

A 15-year-old can today expect to hold a job for 6.4 years, to be unemployed for one year and to be out of the labour force for 1.4 years until the age of 29.

In addition to the average six years spent in education, a young person aged 15 can expect to hold a job for 6.4 of the 15 years to come, to be unemployed for a total of one year and to be out of the labour market for 1.4 years, neither in education nor seeking work. It is worth noting that, in absolute terms, young people can expect to spend less time in unemployment after completion of initial education than they could ten years ago.

It is in the average duration of spells of unemployment that countries vary most, which mainly reflects differences in youth employment rates. The cumulative average duration of unemployment is six months or below in Denmark, Luxembourg, Mexico, Switzerland and the United States, but amounts to more than eighteen months in the Mediterranean countries and Poland.

By and large, men and women differ very little in terms of the expected number of years in unemployment. However, while the situation is similar for both genders in many countries, women clearly appear to be at a disadvantage in Greece and Spain and at an advantage in Australia, Canada, Germany, Hungary, Turkey and the United Kingdom. In some of the latter countries, however, notably in Australia, the United Kingdom and, in particular, Turkey, the lower expectancy for women is largely influenced by the fact that many women leave the labour market, thereby reducing pressure on jobs.

Whereas young men can expect to spend little more than six months neither in education nor in the labour force between the ages of 15 and 29, the average figure for women is over two years. In the Nordic countries (Denmark, Finland and Sweden), young men and young women do not differ in this measure. Conversely, in the Czech Republic, Greece, Hungary, Mexico and Turkey there is a much stronger tendency for young women to leave the labour market. In all of the other countries, women between the ages of 15 and 29 spend an average of about 1.5 years more than men outside the labour market.

DEFINITIONS AND METHODOLOGIES

The statistics presented here are calculated from labour force survey data on age-specific proportions of young people in each of the specified categories. These proportions are then totalled over the 15 to 29 age group to yield the expected number of years spent in various situations. The calculation thus assumes that young persons currently aged 15 years will show the same pattern of education and work between the ages of 15 and 29 as the population between those age limits in the given data year.

Persons in education may include those attending part-time as well as full-time. The definitions of the various labour force statuses are based on the ILO guidelines, except for the category "young in education and employed", which includes all work-study programmes whatever their classification according to the ILO guidelines. The data for this indicator were obtained from a special collection with a reference period in the early part of the calendar year, usually the first quarter or the average of the first three months.

Table E2.1. **Expected years in education and not in education for the youth population (1999)**

By gender and work status for the population 15 to 29 years of age

		Expected years in education			Expected years not in education			
		Not employed	Employed (including work study programmes)	Sub-total	Employed	Unemployed	Not in the labour force	Sub-total
Australia	Men	3.0	3.3	6.4	7.2	1.0	0.5	8.6
	Women	3.0	3.2	6.2	6.1	0.7	2.0	8.8
	M + W	3.0	3.3	6.3	6.7	0.8	1.2	8.7
Belgium	Men	6.2	1.0	7.2	6.2	1.0	0.7	7.8
	Women	6.5	0.9	7.4	5.5	0.8	1.3	7.6
	M + W	6.3	1.0	7.3	5.8	0.9	1.0	7.7
Canada	Men	4.3	2.3	6.6	6.8	0.9	0.7	8.4
	Women	4.2	2.7	6.9	6.1	0.5	1.5	8.1
	M + W	4.2	2.5	6.7	6.5	0.7	1.1	8.3
Czech Republic	Men	3.9	0.1	4.0	8.9	0.9	1.2	11.0
	Women	4.2	0.1	4.2	6.1	3.5	1.1	10.8
	M + W	4.1	0.1	4.1	7.5	2.2	1.2	10.9
Denmark	Men	2.8	5.3	8.1	6.2	0.5	0.2	6.9
	Women	3.8	5.0	8.8	5.0	0.4	0.8	6.2
	M + W	3.3	5.1	8.5	5.6	0.4	0.5	6.5
Finland	Men	6.0	1.7	7.7	5.1	1.1	1.1	7.3
	Women	6.5	2.0	8.6	4.1	0.9	1.5	6.4
	M + W	6.2	1.9	8.1	4.6	1.0	1.3	6.9
France	Men	6.8	1.0	7.8	5.5	1.3	0.4	7.2
	Women	7.3	0.7	8.0	4.4	1.4	1.2	7.0
	M + W	7.0	0.8	7.9	5.0	1.3	0.8	7.1
Germany	Men	4.3	2.5	6.8	6.7	0.8	0.7	8.3
	Women	4.6	2.1	6.7	5.8	0.6	1.9	8.3
	M + W	4.4	2.3	6.7	6.3	0.7	1.3	8.3
Greece	Men	5.7	0.3	6.0	7.0	1.4	0.5	9.0
	Women	5.7	0.2	6.0	4.7	2.2	2.1	9.0
	M + W	5.7	0.3	6.0	5.8	1.8	1.3	9.0
Hungary	Men	5.0	0.6	5.6	7.3	0.9	1.2	9.4
	Women	5.2	0.6	5.9	5.1	0.5	3.5	9.1
	M + W	5.1	0.6	5.7	6.2	0.7	2.3	9.3
Italy	Men	5.4	0.5	5.8	6.1	1.6	1.4	9.2
	Women	5.8	0.4	6.2	4.2	1.8	2.8	8.8
	M + W	5.6	0.4	6.0	5.2	1.7	2.1	9.0
Luxembourg	Men	5.9	1.1	7.0	7.2	0.3	0.4	8.0
	Women	5.7	0.5	6.2	6.4	0.3	2.1	8.8
	M + W	5.8	0.8	6.6	6.8	0.3	1.2	8.4
Mexico	Men	2.9	1.2	4.1	10.1	0.3	0.5	10.9
	Women	3.1	0.7	3.8	4.9	0.2	6.1	11.2
	M + W	3.0	0.9	3.9	7.4	0.2	3.4	11.1
Netherlands	Men	2.8	2.9	5.6	8.6	0.4	0.3	9.4
	Women	2.6	2.9	5.6	7.7	1.4	0.3	9.4
	M + W	2.7	2.9	5.6	8.2	0.9	0.3	9.4
Poland	Men	6.0	0.4	6.3	6.3	1.7	0.7	8.7
	Women	6.2	0.2	6.5	4.9	1.5	2.1	8.5
	M + W	6.1	0.3	6.4	5.6	1.6	1.4	8.6
Portugal	Men	4.6	0.8	5.4	8.4	0.5	0.6	9.6
	Women	5.1	0.8	5.9	6.8	0.6	1.7	9.1
	M + W	4.9	0.8	5.7	7.6	0.6	1.1	9.3
Spain	Men	5.2	0.6	5.8	6.7	1.6	0.8	9.2
	Women	6.4	0.7	7.0	4.6	2.0	1.4	8.0
	M + W	5.8	0.6	6.4	5.7	1.8	1.1	8.6
Sweden	Men	5.3	1.4	6.8	7.0	0.8	0.5	8.2
	Women	5.8	1.7	7.5	6.1	0.6	0.7	7.5
	M + W	5.4	1.5	6.9	6.7	0.7	0.6	8.1
Switzerland	Men	3.0	3.8	6.8	7.2	0.4	0.6	8.2
	Women	2.7	3.4	6.1	7.3	0.4	1.2	8.9
	M + W	2.8	3.6	6.4	7.2	0.4	0.9	8.6
Turkey[1]	Men	3.0	0.3	3.3	9.5	1.3	0.9	11.7
	Women	2.0	0.2	2.1	4.1	0.5	8.2	12.9
	M + W	2.5	0.2	2.7	6.8	0.9	4.7	12.3
United Kingdom[1]	Men	2.9	2.5	5.4	8.0	1.1	0.5	9.6
	Women	2.9	2.8	5.7	6.5	0.6	2.2	9.3
	M + W	2.9	2.6	5.5	7.3	0.9	1.3	9.5
United States[1]	Men	3.8	2.6	6.4	7.3	0.5	0.7	8.6
	Women	3.7	2.9	6.6	6.0	0.5	2.0	8.4
	M + W	3.7	2.8	6.5	6.7	0.5	1.3	8.5
Country mean	**Men**	**4.5**	**1.6**	**6.1**	**7.3**	**0.9**	**0.7**	**8.9**
	Women	**4.7**	**1.6**	**6.3**	**5.6**	**1.0**	**2.2**	**8.7**
	M + W	**4.6**	**1.6**	**6.2**	**6.4**	**1.0**	**1.4**	**8.8**

1. Year of reference 1998.

Source: OECD. See Annex 3 for national data sources.

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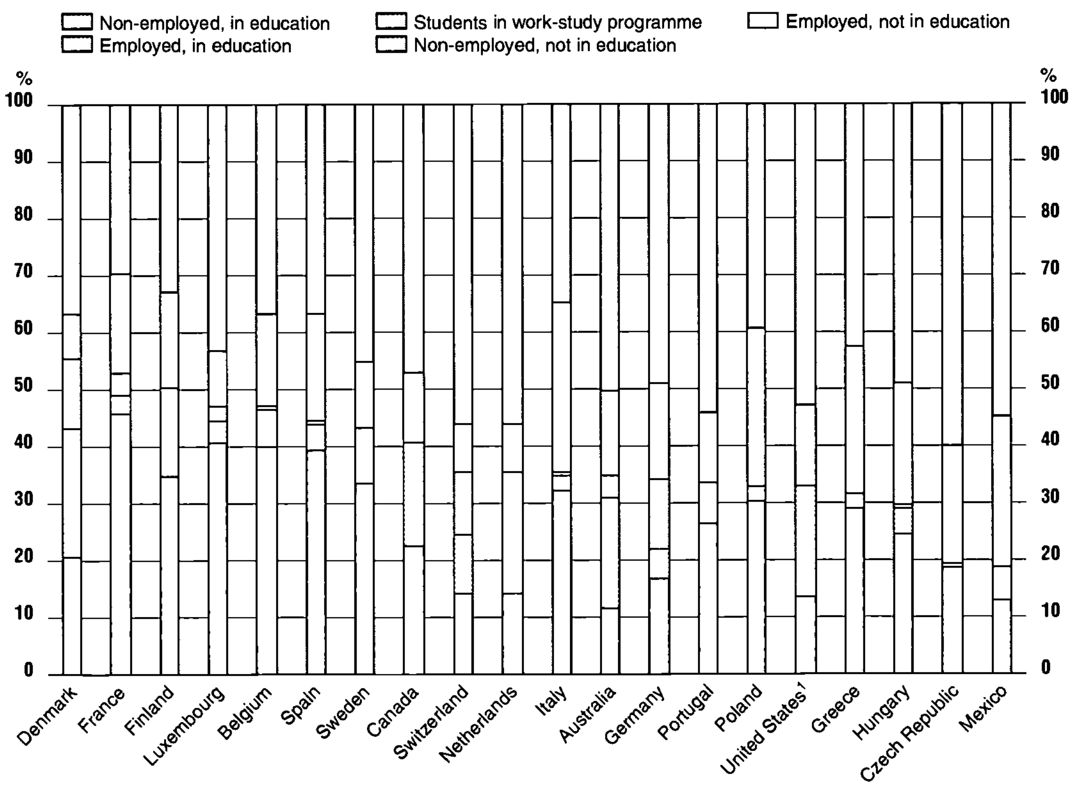
EDUCATION AND WORK AMONG THE YOUTH POPULATION

- With increasing age, the percentage of young people no longer in education rises, and participation in the labour force increases. The percentage of young people not in education in most countries rises to between 50 and 70 per cent among the age group 20 to 24 years.
- In certain countries, education and work largely occur consecutively, while in other countries they may take place concurrently. Work-study programmes, relatively common in European countries, offer coherent vocational education routes to recognised occupational qualifications. Many young people also combine paid work out of school hours with education. This form of initial contact with the labour market is a major feature of transition processes in a large group of countries. In other countries, initial education and work are rarely associated.

Chart E3.1. **Education and work status of the population 20 to 24 years of age (1999)**

Percentage of the population 20 to 24 years of age in education and not in education, by work status



1. Year of reference 1998.

Countries are ranked in descending order of the percentage of the population 20 to 24 years of age in education.

Source: OECD. Table E3.1.

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POLICY CONTEXT

OECD ***countries vary considerably in the extent to which young people combine work and education.***

All OECD Member countries are experiencing rapid social and economic changes that are making the transition to working life more uncertain. The initial exposure of young people to the world of work can take place either during education or following the completion of initial education. OECD countries vary considerably in the extent to which young persons combine work and education. The general state of the labour market seems to have a significant influence on both these phenomena.

EVIDENCE AND EXPLANATIONS

Young adulthood is generally the period when initial education is completed and young people enter the labour market for the first time. In certain countries, education and work largely occur consecutively, while in other countries they may take place concurrently. The various patterns of education combined with work can have significant effects on the success of the transition process. Of particular interest, for example, is the extent to which working while in education may facilitate eventual definitive entry into the labour force. On the other hand, a high number of hours of work may represent dropping out rather than successful transition. Table E3.1 reveals the education and work status of young people in a number of OECD countries, in the age groups 15 to 19, 20 to 24, 25 to 29, and the overall situation for all young people aged 15 to 29.

Combining work and education

Work-study programmes and other ways of combining work and education are common in some countries, but rare in others.

Working during education can occur in the context of work-study programmes or in the form of part-time jobs out of school hours. Work-study programmes are relatively common in European countries such as Denmark, Germany and Switzerland, offering coherent vocational education routes to recognised occupational qualifications. Many young people also combine paid work out of school hours with education. This form of initial contact with the labour market is a major feature of the transition to work in Australia, Canada, Denmark, the Netherlands, the United States and, to a lesser extent, Finland, Germany and Sweden. Finally, countries in which initial education and work are rarely associated include Belgium, France, Greece, Italy and Spain.

During the years spent in education, the employment status of men and women is broadly similar in most countries.

The employment status of men and women is broadly similar during the years spent in education, with the exception of Germany, where there is a greater participation by men in work-study programmes. Interestingly, in Australia, Canada, Denmark, Finland, Sweden and the United States, more women than men in the age group 15 to 29 years combine work outside school hours with education (Tables E3.1*a, b*).

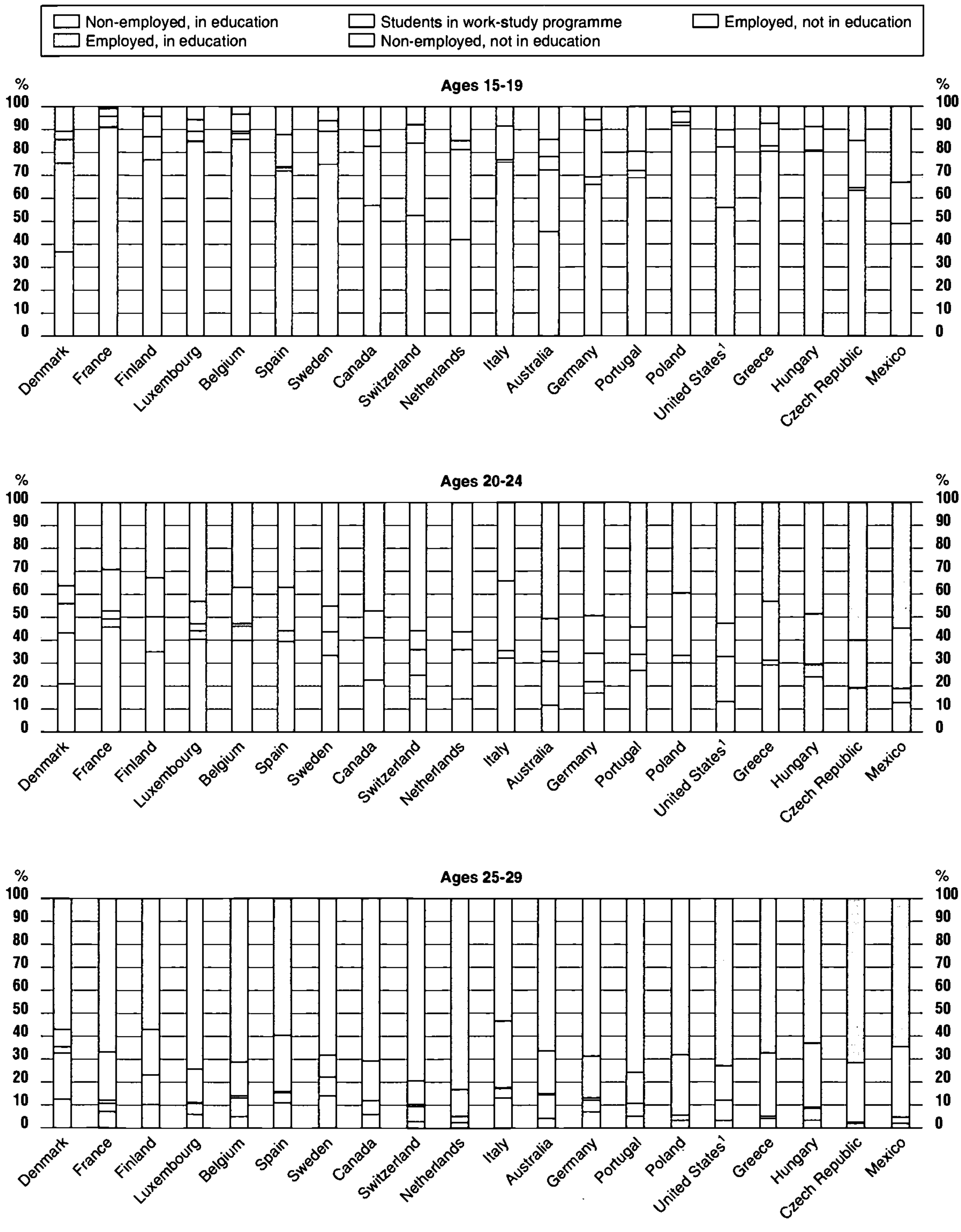
Entry into the labour market following the completion of initial education

The transition from education to work takes place at different points of time in different countries, depending on several educational and labour market factors.

With increasing age, the percentage of young people no longer in education rises, and participation in the labour force increases. The percentage of young people not in education in most countries is within the 10 to 35 per cent range among 15 to 19-year-olds, rises to between 50 and 70 per cent among the 20 to 24 age group and reaches 80 to 95 per cent among 25 to 29-year-olds (Chart E3.2). However, in many OECD countries young people's transition to work begins at a later age, and in some cases it extends over a longer period. This current trend reflects not only the demand

Chart E3.2. **Education and work status of the youth population (1999)**

Percentage of the youth population in education and not in education, by age group and work status



1. Year of reference 1998.

Countries are ranked in descending order of the percentage of the population 20 to 24 years of age in education.

Source: OECD. Table E3.1.

for education, but also the general state of the labour market, the length of educational programmes, the orientation of educational programmes in relation to the labour market and the prevalence of part-time education.

The age of entry into the labour market following completion of initial education has consequences for employment. Overall, older non-students are more likely to be employed than non-students in the 15 to 19 age group, while a higher percentage of male than female non-students are working. In relative terms, more women than men are out of the labour force, particularly during the years associated with child-bearing and child-rearing, between the ages of 25 and 29 (Tables E3.1*a*, *b*).

Employment to population ratios among young adults who are not in education can supply information on the effectiveness of transition frameworks and thus help policy-makers to evaluate transition policies. In most countries, fewer than 60 (and in some even fewer than 40) per cent of 15 to 19-year-olds not in education are working, which suggests that because these young people have left school early, they are not viewed by employers as having the skills necessary for productive employment. Employment to population ratios for 20 to 24-year-olds generally exceed 70 per cent, but ratios in some countries such as Finland, France, Greece, Italy, and Spain are still around or below 65 per cent. For the 25 to 29 age group, most countries have ratios of between 70 and 80 per cent, with the exception of Greece, Italy and Spain. Employment to population ratios for men tend to be higher than for women after completion of initial education, probably because of family responsibilities and because the social acceptability of the non-employed status is still higher for women than for men in many countries (Table E3.1*a*, *b*).

Unemployment rate and ratio of unemployed non-students to the total youth population

Young people represent the principal source of new skills in our societies. In most OECD countries, education policy seeks to encourage young people to complete at least secondary education. Since jobs on offer in the labour market require ever higher general skill levels and more flexible learning skills, persons with low attainment are often severely penalised in the labour market. Despite the progress made in raising attainment levels, many young people are still subject to unemployment. Differences in the ratio of unemployed non-students to the total youth population, by level of educational attainment are an indicator of the degree to which further education improves the economic opportunities of any young man or woman.

Classic unemployment measures overestimate unemployment in the transition period and are insensitive to different systems of combining education and work in the transition period.

The youth unemployment rate by age group is the most common measure available for describing the problems of transition between school and work, which is more difficult for those leaving the education system relatively early, *i.e.*, for the younger age groups of non-students. The youth unemployment rate, however, gives only a partial view of the situation (see the 2000 edition of *Education at a Glance*). The classic unemployment rate does not take educational circumstances into consideration. Consequently, an unemployed young person counted in the numerator may, in some countries, be enrolled in education. The denominator may include young people in vocational training, provided they are apprenticed, but not similar people in school-based vocational courses. Hence, if almost all the young people in a particular age group are still in education, the employment rate will reflect only the few who are in the labour market. The figure for unemployment may in consequence look very high, particularly among the youngest cohort, who have usually left the education system with very low qualifications.

Introducing an indicator showing the ratio of non-students unemployed to the total age cohort is a way of focusing on the most relevant population for the purposes of education policy and youth employment policy. This is because young people who are looking for a job while still in education do not have the same attitude to the labour market as those entering the labour market after leaving the education system. The former are usually seeking part-time or temporary employment that will fit in with their studies. These ratios lend themselves more easily to international comparison than classic unemployment rates, since they no longer include young people who are both working and studying, or the effects of apprenticeship on the unemployment rate.

Among those without upper secondary education, the ratio of unemployed non-students to the total youth population is on average 1.5 times as high as among upper secondary graduates.

On average, upper secondary completion reduces the unemployment to population ratio (that is, unemployment among non-students as a percentage of the entire age cohort) of 20 to 24-year-olds by about 6 percentage points, and that of 25 to 29-year-olds by about 4 points (Table E3.2). In 12 out of 19 countries, the unemployment to population ratio among young people not in education aged 20 to 24 years is less than 8 per cent if they have completed upper secondary or post-secondary non-tertiary education. In only five countries does this proportion remain below 8 per cent among those without upper secondary attainment. Since completion of upper secondary education has become the norm in most OECD countries, many young persons who do not complete this level can expect to have employment problems throughout their working lives.

Upper secondary education, and even tertiary-level education, does not guarantee a job.

In a number of countries, young people in the age group 20 to 24 face a ratio of unemployed non-students to total youth population of above 7 per cent even if they have completed upper secondary education (Chart E3.3). In a few countries, even those who have completed tertiary-level education, probably a first degree in view of the age band involved, are subject to considerable unemployment when they enter the labour market. The ratio of unemployed non-students to total youth population among this group is 10 per cent or more in Finland, Greece and Italy, and it is above 13 per cent for the 25 to 29-year-old age group in Greece, Italy and Spain (Table E3.2).

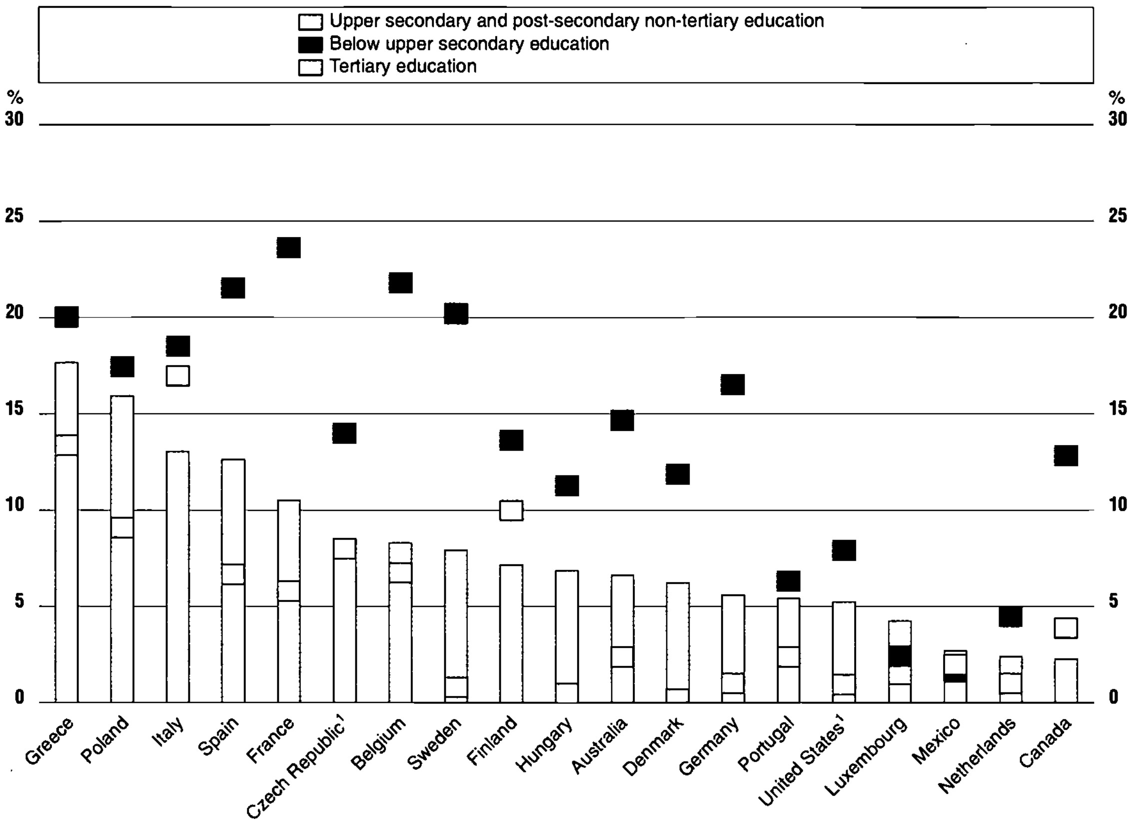
The effect on future chances of employment of working while in education

Early opportunities of combining work and education may have a positive effect on future employment depending on the institutional context.

There is an overall association across countries between a relatively high incidence of working while in education and a relatively low incidence of non-students unemployment (Chart E3.4). This reflects the fact that countries in which opportunities to combine work and education are more widely available to 15 to 19-year-olds generally have a higher proportion of their 20 to 24-year-old non-students in employment. However, this conclusion must be considered tentative, since the two age groups are different cohorts and the association is at the aggregate level.

Countries such as Denmark, Switzerland and Germany, which have well-developed work-study programmes, also boast relatively low ratios of unemployed non-students. The high employment rates among students and

Chart E3.3. **Ratio of unemployed non-students to the population 20 to 24 years of age, by level of educational attainment (1999)**



1. Year of reference 1998.

Countries are ranked in descending order of the ratio of unemployed non-students to the population 20 to 24 years of age having attained upper secondary and post-secondary non-tertiary education.

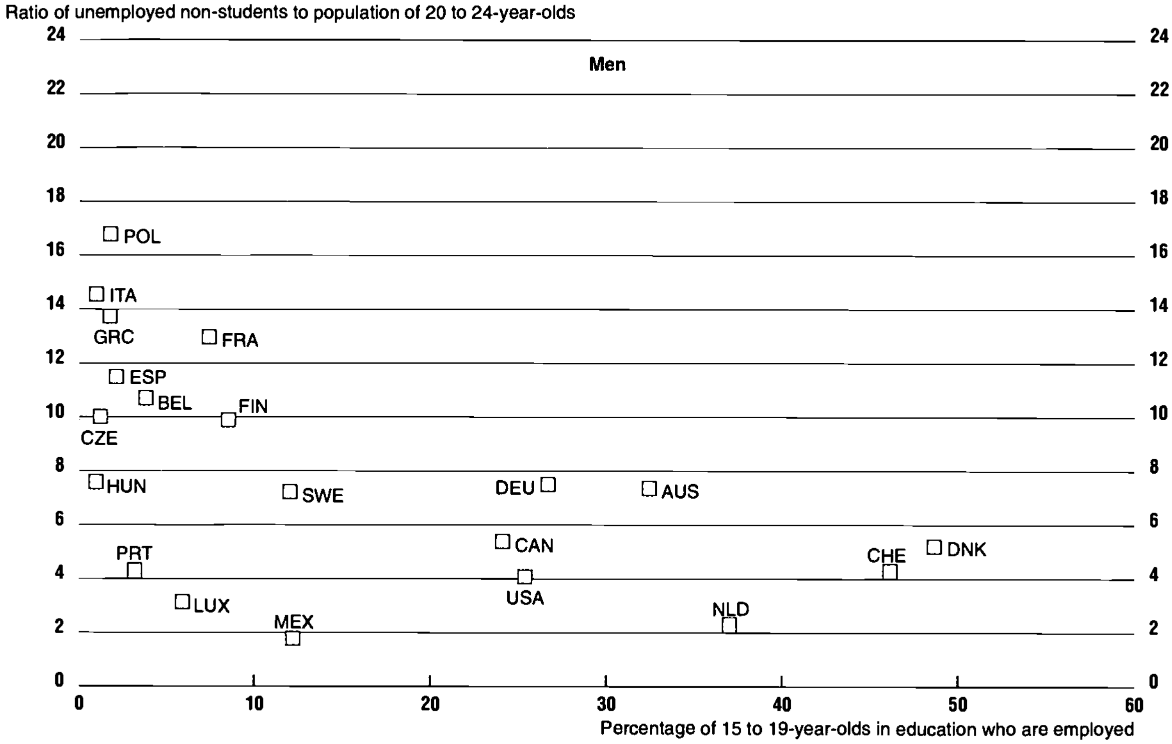
Source: OECD. Table E3.2.

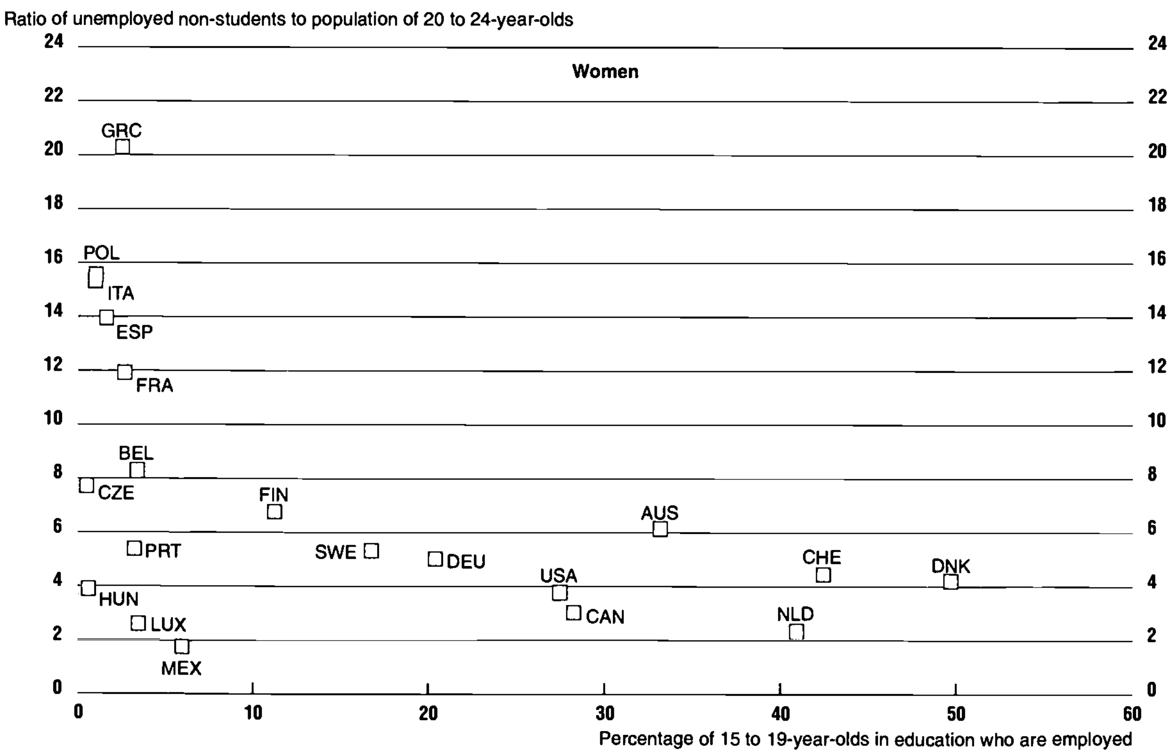
the relatively low ratios of unemployed non-students in Australia, Canada, Mexico, the Netherlands and the United States may reflect a generally more favourable labour market for young people, regardless of whether they are still in education or have already completed it. There is also a belief that early contact with the labour market may facilitate subsequent integration into the labour force, because of greater familiarity with job search and contacts with prospective employers.

Nevertheless, in most countries, the wide differences in participation rates among young people still in education (from less than 10 to almost 50 per cent) are not reflected in the ratios of unemployed 20 to 24 year-olds not in education (between 2 and 7 per cent for women and 8 per cent for men). One group of countries, including France, Greece, Italy, Poland and Spain, appear to be in a difficult situation regarding young entrants to the labour market, even more difficult perhaps than the situation of Hungary, Mexico or Portugal, where the participation of younger students in employment is equally low.

Chart E3.4. **Relationship between school and work and unemployment of the youth population (1999)**

Percentage of the population 15 to 19 years of age who are in education and employed versus the ratio of unemployed non-students to total population of 20 to 24-year-olds, by gender





Source: OECD. Tables E3.1*a*, *b*.

E3

DEFINITIONS AND METHODOLOGIES

The data for this indicator were obtained from a special collection in the first quarter of the year.

The data for this indicator were obtained from a special collection with a reference period in the early part of the calendar year, usually the first quarter or the average of the first three months; they therefore exclude summer employment. The labour force status categories shown in this section are defined in accordance with the ILO guidelines, with one exception. For the purposes of these indicators, persons in work-study programmes (see below) have been classified separately as "in education" and "employed", without reference to their labour force ILO status during the survey reference week. Such persons may not necessarily be in the work component of their programmes during the reference week, and may therefore not be employed at that time.

"Work-study programmes" are combinations of work and education in which periods of both form part of an integrated, formal education or training activity Examples of such programmes include the "dual system" in Germany; "*apprentissage*" or "*formation en alternance*" in France and Belgium; internship or co-operative education in Canada; apprenticeship in Ireland; and "youth training" in the United Kingdom. Vocational education and training occur not only in school settings but also in working environments. Sometimes students or trainees are paid, sometimes not. There is a strong relationship between the job and the course or training given.

The enrolment rates shown in Table E3.1 are from labour force survey data and are essential to understand the patterns of education combined with work described in this chapter. However, enrolment rates may not agree with those generated from national administrative statistics. There are a number of reasons for this.

First, age may not be measured in the same way. For example, in administrative data, both enrolment and age are measured on January 1st in countries in the northern hemisphere, whereas in some labour force surveys, enrolment is measured in the reference week while the age recorded is the age that will be attained at the end of the calendar year, even if the survey is conducted in the early part of the year. Under these circumstances, the enrolment rates recorded may in some cases reflect a population that is almost one year younger than the specified age range. At ages when movements out of education may be significant, this can have an impact on enrolment rates.

A second source of discrepancy concerns the fact that there may be young people enrolled in more than one programme. Such persons would be counted twice in administrative statistics but only once in a labour force survey. In addition, not all enrolments may be captured in administrative statistics, particularly enrolment in profit-making institutions.

For these reasons (and there may be others), the enrolment rates shown cannot be directly compared with those appearing in other chapters of this publication, nor are they necessarily comparable between countries, particularly if the method of measuring age differs. The estimates given here therefore need to be treated with some caution.

Table E3.1. **Education and work status of the youth population (1999)**

Percentage of the youth population in education and not in education, by age group and work status

	Age group	In education					Not in education				Total in education and not in education
		Students in work-study programme[1]	Other employed	Unemployed	Not in the labour force	Sub-total	Employed	Unemployed	Not in the labour force	Sub-total	
Australia	15-19	5.9	26.9	6.3	39.2	78.2	14.4	4.4	3.0	21.8	100
	20-24	3.9	19.0	2.2	9.8	34.9	50.6	6.7	7.8	65.1	100
	25-29	0.5	10.4	0.8	3.5	15.0	66.4	5.2	13.3	85.0	100
Belgium	15-19	1.4	2.2	1.6	84.1	89.3	3.7	1.8	5.2	10.7	100
	20-24	0.8	6.5	2.7	37.2	47.1	37.0	9.5	6.4	52.9	100
	25-29	0.8	8.2	1.4	3.8	14.3	71.3	6.3	8.1	85.7	100
Canada	15-19	a	26.1	5.4	51.3	82.9	10.2	2.9	4.0	17.1	100
	20-24	a	18.5	1.6	20.7	40.9	47.4	4.2	7.5	59.1	100
	25-29	a	5.9	0.4	5.7	12.0	70.6	6.8	10.6	88.0	100
Czech Republic	15-19	a	0.8	n	63.5	64.3	14.8	6.7	14.2	35.7	100
	20-24	a	0.6	n	18.9	19.6	59.8	8.8	11.8	80.4	100
	25-29	a	0.1	n	2.2	2.4	71.7	7.8	18.1	97.6	100
Denmark	15-19	10.7	38.5	4.4	32.2	85.8	10.8	1.4	2.0	14.2	100
	20-24	12.7	22.1	3.9	17.0	55.8	36.6	4.7	2.9	44.2	100
	25-29	2.6	20.4	2.1	10.4	35.5	56.7	2.7	5.2	64.5	100
Finland	15-19	a	9.8	5.2	71.6	86.6	4.7	2.8	5.9	13.4	100
	20-24	a	15.1	2.6	32.5	50.2	32.9	8.4	8.5	49.8	100
	25-29	a	13.0	1.6	8.9	23.4	57.0	8.8	10.7	76.6	100
France	15-19	4.8	0.3	n	90.4	95.7	1.0	2.0	1.3	4.3	100
	20-24	4.1	3.2	0.9	44.9	53.1	29.4	12.4	5.1	46.9	100
	25-29	1.0	3.7	0.5	6.6	11.9	66.7	12.4	9.0	88.1	100
Germany	15-19	20.3	3.2	0.7	65.2	89.5	6.0	1.4	3.1	10.5	100
	20-24	12.3	5.1	0.4	16.5	34.3	49.0	6.3	10.4	65.7	100
	25-29	1.3	4.9	0.4	7.0	13.6	68.2	6.2	11.9	86.4	100
Greece	15-19	a	2.1	0.9	79.4	82.4	7.5	5.3	4.8	17.6	100
	20-24	a	2.3	1.7	27.4	31.4	42.8	17.2	8.6	68.6	100
	25-29	a	0.8	1.0	3.3	5.2	67.3	14.0	13.5	94.8	100
Hungary	15-19	n	n	n	79.7	80.9	8.9	2.6	7.7	19.1	100
	20-24	n	5.1	n	23.7	29.7	48.9	5.7	15.6	70.3	100
	25-29	n	5.3	n	3.2	8.9	62.9	5.4	22.8	91.1	100
Italy	15-19	0.2	0.7	0.7	75.2	76.9	8.3	5.8	9.0	23.1	100
	20-24	0.4	2.8	2.0	30.3	35.6	34.6	14.9	14.9	64.4	100
	25-29	0.2	3.9	1.3	12.3	17.6	53.4	12.3	16.6	82.4	100
Luxembourg	15-19	4.2	n	n	84.4	89.2	5.8	1.3	3.7	10.8	100
	20-24	2.9	4.0	n	40.2	47.2	43.2	2.9	6.8	52.8	100
	25-29	n	4.8	n	6.1	11.3	74.1	2.2	12.4	88.7	100
Mexico	15-19	a	9.0	0.2	39.8	49.1	33.1	1.4	16.5	50.9	100
	20-24	a	5.9	0.2	12.7	18.8	55.0	1.7	24.5	81.2	100
	25-29	a	2.5	0.1	2.2	4.8	64.8	1.6	28.8	95.2	100
Netherlands	15-19	m	38.9	4.9	37.4	81.3	14.9	1.5	2.3	18.7	100
	20-24	m	21.2	1.2	13.3	35.7	56.3	2.3	5.7	64.3	100
	25-29	m	2.8	0.2	2.1	5.2	83.0	2.5	9.3	94.8	100
Poland	15-19	a	1.4	n	91.5	93.1	2.3	2.5	2.0	6.9	100
	20-24	a	2.6	1.0	29.5	33.1	39.7	16.1	11.1	66.9	100
	25-29	a	1.8	n	3.3	5.4	68.0	12.2	14.5	94.6	100
Portugal	15-19	a	3.2	n	68.2	71.9	19.8	2.8	5.6	28.1	100
	20-24	a	7.2	1.0	25.4	33.6	54.1	4.8	7.4	66.4	100
	25-29	a	5.7	n	4.5	10.8	75.7	3.8	9.8	89.2	100
Spain	15-19	n	1.7	2.1	69.6	73.6	12.6	7.8	6.1	26.4	100
	20-24	n	4.8	4.7	34.7	44.2	36.9	12.7	6.1	55.8	100
	25-29	n	4.6	3.3	7.8	15.8	59.3	14.8	10.2	84.2	100
Sweden	15-19	a	14.3	n	74.4	88.9	6.2	1.5	3.3	11.1	100
	20-24	a	10.2	n	32.9	43.6	45.0	6.4	5.0	56.4	100
	25-29	a	8.2	n	13.9	22.4	68.1	5.2	4.2	77.6	100
Switzerland	15-19	31.7	12.6	n	38.7	84.4	8.0	n	6.0	15.6	100
	20-24	11.2	10.4	n	13.4	35.8	55.8	4.4	4.0	64.2	100
	25-29	n	6.5	n	2.8	10.4	79.3	2.6	7.7	89.6	100
United States[2]	15-19	a	26.4	4.4	51.4	82.2	10.5	2.3	5.0	17.8	100
	20-24	a	19.7	1.2	12.1	33.0	52.6	3.9	10.5	67.0	100
	25-29	a	8.6	0.4	2.9	11.9	72.7	3.6	11.8	88.1	100
Country mean	**15-19**	**4.2**	**10.9**	**1.8**	**64.4**	**81.3**	**10.2**	**3.1**	**5.5**	**18.7**	**100**
	20-24	**2.5**	**9.3**	**1.4**	**24.6**	**37.9**	**45.4**	**7.7**	**9.0**	**62.1**	**100**
	25-29	**0.3**	**6.1**	**0.7**	**5.6**	**12.9**	**67.9**	**6.8**	**12.4**	**87.1**	**100**

1. Students in work-study programmes are considered to be both in education and employed, irrespective of their status according to the ILO definition. Consequently categories "other employed", "unemployed" and "not in the labour force" exclude students enrolled in work-study programmes.
2. Year of reference 1998.

Source: OECD. See Annex 3 for national data sources.

Table E3.1a. **Education and work status of young men (1999)**

Percentage of young men in education and not in education, by age group and work status

	Age group	In education					Not in education				Total in education and not in education
		Students in work-study programme[1]	Other employed	Unemployed	Not in the labour force	Sub-total	Employed	Unemployed	Not in the labour force	Sub-total	
Australia	15-19	9.9	22.5	6.4	39.7	78.6	14.1	4.9	2.5	21.4	100
	20-24	6.6	16.6	2.2	9.4	34.8	54.3	7.4	3.5	65.2	100
	25-29	0.8	10.5	0.9	3.2	15.3	73.9	6.8	3.9	84.7	100
Belgium	15-19	2.2	1.6	1.6	82.7	88.0	4.5	1.8	5.7	12.0	100
	20-24	1.0	6.1	2.0	35.3	44.4	40.8	10.7	4.0	55.6	100
	25-29	0.9	8.7	1.7	4.3	15.6	74.3	6.5	3.6	84.4	100
Canada	15-19	a	24.1	5.6	51.6	81.4	10.9	4.0	3.8	18.6	100
	20-24	a	15.9	1.8	20.7	38.3	50.9	5.4	5.4	61.7	100
	25-29	a	5.7	0.2	6.0	11.9	74.6	8.1	5.3	88.1	100
Czech Republic	15-19	a	1.2	n	60.1	61.3	16.9	7.4	14.4	38.7	100
	20-24	a	0.9	n	19.2	20.1	67.4	10.0	2.5	79.9	100
	25-29	a	0.1	n	2.6	2.7	88.6	6.7	1.9	97.3	100
Denmark	15-19	16.1	32.5	4.1	31.3	84.0	11.8	2.0	2.2	16.0	100
	20-24	16.9	20.7	3.2	12.3	53.2	40.8	5.2	0.9	46.8	100
	25-29	2.8	20.2	1.6	7.0	31.5	64.0	2.7	1.8	68.5	100
Finland	15-19	a	8.5	4.2	71.0	83.7	4.1	3.2	9.0	16.3	100
	20-24	a	13.1	2.4	30.0	45.4	36.8	9.9	7.9	54.6	100
	25-29	a	13.4	1.6	8.7	23.7	63.2	9.0	4.1	76.3	100
France	15-19	7.1	n	n	87.7	95.2	1.2	2.3	1.2	4.8	100
	20-24	5.2	2.7	0.7	41.9	50.4	33.7	13.0	3.0	49.6	100
	25-29	1.0	3.6	0.4	6.5	11.6	73.8	11.6	3.0	88.4	100
Germany	15-19	23.5	3.1	0.7	61.4	88.7	7.1	1.7	2.5	11.3	100
	20-24	11.4	4.8	0.4	15.8	32.4	53.1	7.5	7.0	67.6	100
	25-29	1.5	5.8	0.4	8.4	16.1	72.0	7.3	4.6	83.9	100
Greece	15-19	a	1.7	n	79.9	82.1	9.8	4.1	4.0	17.9	100
	20-24	a	2.2	1.2	27.6	31.0	51.9	13.7	3.4	69.0	100
	25-29	a	1.7	n	3.1	5.5	80.3	11.4	2.8	94.5	100
Hungary	15-19	n	0.9	0.4	79.2	80.5	9.8	3.1	6.7	19.5	100
	20-24	0.4	4.2	0.5	22.6	27.7	55.6	7.6	9.2	72.3	100
	25-29	0.4	5.3	0.2	2.8	8.7	76.8	6.7	7.8	91.3	100
Italy	15-19	n	0.7	0.6	73.9	75.4	10.5	5.8	8.3	24.6	100
	20-24	0.6	2.6	1.4	27.7	32.4	40.2	14.6	12.9	67.6	100
	25-29	n	4.1	1.1	12.3	17.8	63.5	11.6	7.2	82.2	100
Luxembourg	15-19	5.4	n	n	84.0	89.9	6.5	0.9	2.7	10.1	100
	20-24	4.6	4.9	n	41.2	50.9	42.2	3.1	3.8	49.1	100
	25-29	n	6.6	n	8.0	14.9	80.9	2.0	2.2	85.1	100
Mexico	15-19	a	12.2	0.2	37.0	49.4	44.4	1.6	4.6	50.6	100
	20-24	a	7.2	0.2	12.9	20.3	74.6	1.8	3.3	79.7	100
	25-29	a	3.0	0.0	2.2	5.3	90.3	2.0	2.3	94.7	100
Netherlands	15-19	m	37.0	3.9	38.5	79.4	16.9	1.7	1.9	20.6	100
	20-24	m	21.2	1.3	14.5	37.0	57.4	2.3	3.4	63.0	100
	25-29	m	3.6	0.2	2.3	6.0	88.1	2.5	3.4	94.0	100
Poland	15-19	a	1.8	n	89.8	91.9	2.9	3.1	2.1	8.1	100
	20-24	a	2.9	n	28.3	32.0	44.7	16.8	6.6	68.0	100
	25-29	a	2.3	n	3.2	5.9	76.4	12.7	5.1	94.1	100
Portugal	15-19	a	3.2	n	66.4	69.9	23.1	2.6	4.4	30.1	100
	20-24	a	6.4	n	23.7	31.1	60.0	4.3	4.5	68.9	100
	25-29	a	6.4	n	3.6	10.1	82.4	3.6	3.9	89.9	100
Spain	15-19	n	1.9	1.6	64.8	68.5	15.9	8.2	7.4	31.5	100
	20-24	n	4.1	3.1	31.2	38.6	44.1	11.5	5.8	61.4	100
	25-29	n	4.6	2.4	7.4	14.5	69.4	12.2	3.9	85.5	100
Sweden	15-19	a	12.0	n	75.7	87.8	6.0	1.3	5.0	12.2	100
	20-24	a	9.1	0.4	29.5	39.0	49.3	7.5	4.2	61.0	100
	25-29	a	8.0	0.2	12.3	20.4	72.3	5.8	1.4	79.6	100
Switzerland	15-19	37.8	8.4	n	38.5	86.0	6.0	1.7	6.4	14.0	100
	20-24	9.8	11.9	n	15.7	38.2	54.4	4.3	3.1	61.8	100
	25-29	n	7.6	n	2.2	11.1	84.8	2.3	1.7	88.9	100
United States[2]	15-19	a	25.4	4.5	51.4	81.3	12.2	2.6	3.9	18.7	100
	20-24	a	18.2	1.3	12.8	32.3	58.0	4.1	5.7	67.7	100
	25-29	a	8.2	0.3	2.4	10.9	80.3	3.4	5.4	89.1	100
Country mean	**15-19**	**5.4**	**9.9**	**1.7**	**63.2**	**80.2**	**11.7**	**3.2**	**4.9**	**19.8**	**100**
	20-24	**3.0**	**8.8**	**1.1**	**23.6**	**36.5**	**50.5**	**8.0**	**5.0**	**63.5**	**100**
	25-29	**0.4**	**6.5**	**0.6**	**5.4**	**13.0**	**76.5**	**6.8**	**3.8**	**87.0**	**100**

1. Students in work-study programmes are considered to be both in education and employed, irrespective of their status according to the ILO definition. Consequently categories "other employed", "unemployed" and "not in the labour force" exclude students enrolled in work-study programmes.
2. Year of reference 1998.

Source: OECD. See Annex 3 for national data sources.

Table E3.1*b*. Education and work status of young women (1999)

Percentage of young women in education and not in education, by age group and work status

	Age group	In education: Students in work-study programme[1]	In education: Other employed	In education: Unemployed	In education: Not in the labour force	In education: Sub-total	Not in education: Employed	Not in education: Unemployed	Not in education: Not in the labour force	Not in education: Sub-total	Total in education and not in education
Australia	15-19	1.7	31.5	6.1	38.5	77.8	14.7	4.0	3.5	22.2	100
	20-24	1.2	21.4	2.2	10.2	34.9	46.8	6.1	12.2	65.1	100
	25-29	0.1	10.2	0.8	3.7	14.8	59.1	3.6	22.5	85.3	100
Belgium	15-19	0.6	2.8	1.6	85.5	90.5	3.0	1.8	4.6	9.5	100
	20-24	0.6	6.6	3.3	39.1	49.9	33.0	8.3	8.8	50.1	100
	25-29	0.7	7.7	1.2	3.3	12.9	68.2	6.1	12.8	87.1	100
Canada	15-19	a	28.2	5.2	51.1	84.5	9.5	1.8	4.2	15.5	100
	20-24	a	21.2	1.5	20.7	43.5	43.8	3.0	9.7	56.5	100
	25-29	a	6.0	0.5	5.5	12.0	66.6	5.4	15.9	88.0	100
Czech Republic	15-19	a	0.5	n	67.0	67.5	12.6	6.0	14.0	32.6	100
	20-24	a	0.3	n	18.6	19.0	51.7	7.7	21.3	80.7	100
	25-29	a	0.1	n	1.8	1.9	54.1	8.8	35.1	98.0	100
Denmark	15-19	4.9	44.8	4.8	33.3	87.7	9.7	0.8	1.8	12.3	100
	20-24	9.2	23.2	4.6	21.0	58.0	33.1	4.2	4.7	42.0	100
	25-29	2.3	20.6	2.6	13.7	39.2	49.7	2.6	8.5	60.8	100
Finland	15-19	a	11.2	6.1	72.1	89.5	5.3	2.3	2.8	10.5	100
	20-24	a	17.3	2.8	35.1	55.2	28.8	6.8	9.2	44.8	100
	25-29	a	12.5	1.6	9.0	23.1	50.3	8.7	17.9	76.9	100
France	15-19	2.3	n	n	93.3	96.2	0.8	1.7	1.3	3.8	100
	20-24	3.0	3.8	1.1	47.9	55.8	25.0	11.9	7.2	44.2	100
	25-29	1.0	3.8	n	6.7	12.2	59.6	13.2	15.0	87.8	100
Germany	15-19	17.0	3.4	0.8	69.1	90.3	4.9	1.2	3.7	9.7	100
	20-24	13.1	5.4	0.4	17.3	36.2	44.7	5.0	14.0	63.8	100
	25-29	1.2	3.9	0.4	5.5	11.1	64.3	5.1	19.6	88.9	100
Greece	15-19	a	2.5	1.4	78.8	82.8	5.1	6.6	5.5	17.2	100
	20-24	a	2.4	2.1	27.3	31.8	34.7	20.3	13.2	68.2	100
	25-29	a	n	1.4	3.5	4.8	54.4	16.6	24.2	95.2	100
Hungary	15-19	n	n	n	80.2	81.3	8.0	2.1	8.7	18.7	100
	20-24	n	6.0	n	24.7	31.7	42.2	3.9	22.2	68.3	100
	25-29	n	5.3	n	3.5	9.1	48.5	4.0	38.3	90.9	100
Italy	15-19	n	0.8	0.9	76.6	78.4	6.0	5.9	9.7	21.6	100
	20-24	n	3.0	2.6	33.0	38.8	28.8	15.3	17.1	61.2	100
	25-29	n	3.6	1.4	12.2	17.4	43.2	13.0	26.3	82.6	100
Luxembourg	15-19	3.1	0.3	n	84.9	88.6	5.2	1.7	4.6	11.4	100
	20-24	n	3.0	n	39.1	43.3	44.2	2.6	10.0	56.7	100
	25-29	n	2.8	n	4.1	7.6	67.1	2.4	22.9	92.4	100
Mexico	15-19	a	5.9	0.2	42.6	48.8	22.0	1.1	28.2	51.2	100
	20-24	a	4.8	0.2	12.4	17.5	37.1	1.7	43.7	82.5	100
	25-29	a	2.0	0.2	2.3	4.4	41.6	1.2	52.7	95.6	100
Netherlands	15-19	m	40.9	6.0	36.2	83.2	12.8	1.3	2.7	16.8	100
	20-24	m	21.2	1.1	12.1	34.3	55.3	2.3	8.1	65.7	100
	25-29	m	2.0	0.3	1.9	4.2	77.8	2.5	15.4	95.8	100
Poland	15-19	a	1.0	n	93.4	94.5	1.6	1.9	2.0	5.5	100
	20-24	a	2.3	1.3	30.6	34.2	35.0	15.5	15.3	65.8	100
	25-29	a	1.3	n	3.2	5.0	59.3	11.7	24.0	95.0	100
Portugal	15-19	a	3.2	n	70.0	73.9	16.3	3.0	6.8	26.1	100
	20-24	a	7.9	n	27.2	36.1	48.2	5.4	10.3	63.9	100
	25-29	a	5.1	n	5.5	11.4	68.9	4.0	15.7	88.6	100
Spain	15-19	0.5	1.6	2.6	74.2	78.8	9.2	7.4	4.6	21.2	100
	20-24	0.5	5.4	6.2	37.9	50.1	29.4	13.9	6.5	49.9	100
	25-29	0.3	4.7	4.2	8.0	17.1	48.9	17.4	16.6	82.9	100
Sweden	15-19	a	16.7	0.3	73.2	90.2	6.5	1.7	1.6	9.8	100
	20-24	a	11.3	0.7	36.4	48.4	40.5	5.3	5.8	51.6	100
	25-29	a	8.5	0.5	15.5	24.4	63.8	4.6	7.2	75.6	100
Switzerland	15-19	25.6	16.9	n	38.9	82.8	10.1	1.4	5.7	17.2	100
	20-24	12.8	8.9	n	11.0	33.3	57.3	4.4	5.0	66.7	100
	25-29	n	5.5	n	3.4	9.7	74.4	2.9	13.0	90.3	100
United States[2]	15-19	a	27.4	4.2	51.4	83.1	8.8	2.1	6.0	16.9	100
	20-24	a	21.1	1.1	11.4	33.6	47.4	3.7	15.3	66.4	100
	25-29	a	9.0	0.4	3.5	12.9	65.4	3.7	18.1	87.1	100
Country mean	**15-19**	**2.9**	**12.0**	**2.0**	**65.5**	**82.5**	**8.6**	**2.8**	**6.1**	**17.5**	**100**
	20-24	**2.1**	**9.8**	**1.6**	**25.7**	**39.3**	**40.4**	**7.4**	**13.0**	**60.7**	**100**
	25-29	**0.3**	**5.7**	**0.8**	**5.8**	**12.8**	**59.3**	**6.9**	**21.1**	**87.2**	**100**

1. Students in work-study programmes are considered to be both in education and employed, irrespective of their status according to the ILO definition. Consequently categories "other employed", "unemployed" and "not in the labour force" exclude students enrolled in work-study programmes.
2. Year of reference 1998.

Source: OECD. See Annex 3 for national data sources.

E3

Table E3.2. **Ratio of unemployed non-students to the total population (1999)**

By level of educational attainment, age group and gender

		Below upper secondary education			Upper secondary and post-secondary non-tertiary education			Tertiary education		All levels of education			
		15-19	20-24	25-29	15-19	20-24	25-29	20-24	25-29	15-19	20-24	25-29	15-29
Australia	Men	6.8	17.7	12.9	3.9	5.8	5.8	1.7	3.1	4.9	7.4	6.8	6.4
	Women	4.8	11.0	6.7	5.0	7.6	3.2	2.9	1.3	4.0	6.1	3.6	4.6
	M + W	5.8	14.7	9.4	4.4	6.6	4.8	2.4	2.1	4.4	6.7	5.2	5.5
Belgium	Men	4.4	21.1	11.8	0.9	7.5	6.3	4.7	2.7	1.8	10.7	6.5	6.3
	Women	5.5	23.0	14.6	0.9	9.8	7.3	8.3	1.9	1.8	8.3	6.1	5.2
	M + W	4.9	21.8	12.8	0.9	8.3	6.8	6.7	2.3	1.5	9.5	6.3	5.8
Canada	Men	3.2	15.4	16.0	6.5	2.9	9.2	4.7	4.6	4.0	5.4	8.1	5.8
	Women	1.4	9.0	9.2	2.9	1.6	6.6	3.3	3.9	1.8	3.0	5.4	3.5
	M + W	2.4	12.8	13.1	4.6	2.3	8.0	3.9	4.2	2.9	4.2	6.8	4.7
Czech Republic	Men	2.4	18.6	21.5	19.3	9.2	6.1	7.7	3.0	7.4	10.0	6.7	8.2
	Women	1.8	9.0	17.4	18.3	7.6	8.7	8.3	4.3	6.0	7.7	8.8	7.5
	M + W	2.1	14.0	19.4	18.8	8.4	7.4	8.0	3.7	6.7	8.8	7.8	7.9
Denmark	Men	2.1	8.8	10.2	2.2	7.4	3.2	n	1.4	2.0	5.2	2.7	3.3
	Women	2.0	15.2	5.7	n	5.2	3.6	0.3	2.1	0.8	4.2	2.6	2.6
	M + W	2.1	11.9	7.6	1.1	6.2	3.4	0.2	1.8	1.4	4.7	2.7	2.9
Finland	Men	2.1	14.2	15.7	11.2	8.7	9.0	13.1	4.5	3.2	9.9	9.0	7.3
	Women	1.3	12.9	9.9	9.1	5.4	10.0	8.4	6.9	2.3	6.8	8.7	5.8
	M + W	1.7	13.6	13.2	10.1	7.2	9.5	10.0	5.9	2.8	8.4	8.8	6.6
France	Men	1.9	25.8	22.0	6.2	10.2	10.3	5.0	6.3	2.3	13.0	11.6	8.9
	Women	1.4	21.2	20.1	4.0	10.8	14.0	6.3	8.6	1.7	11.9	13.2	9.0
	M + W	1.6	23.6	21.1	5.0	10.5	12.1	5.8	7.5	2.0	12.4	12.4	9.0
Germany	Men	2.7	20.9	18.6	0.7	6.5	6.8	0.9	2.5	1.7	7.5	7.2	5.5
	Women	2.1	12.4	9.5	0.4	4.6	5.2	1.1	2.2	1.2	5.0	5.2	3.8
	M + W	2.4	16.5	13.8	0.6	5.6	6.0	1.0	2.4	1.4	6.3	6.2	4.7
Greece	Men	11.2	18.1	10.1	2.8	13.7	10.5	5.8	16.9	4.1	13.7	11.4	9.6
	Women	17.1	22.7	15.2	5.5	21.2	17.1	18.2	18.0	6.6	20.3	16.6	14.5
	M + W	13.8	20.0	12.3	4.2	17.7	13.8	13.4	17.5	5.3	17.2	14.0	12.1
Hungary	Men	10.1	15.1	11.5	2.0	8.6	6.8	0.5	1.3	3.1	7.6	6.7	6.0
	Women	6.6	7.4	5.6	1.6	4.9	4.6	0.5	0.8	2.1	3.9	4.0	3.4
	M + W	8.5	11.3	8.4	1.8	6.9	5.8	0.5	1.1	2.6	5.7	5.4	4.7
Italy	Men	5.3	18.5	12.7	9.5	12.2	10.1	15.4	14.7	5.8	14.5	11.6	11.0
	Women	4.2	18.6	12.3	16.5	13.9	12.5	17.9	18.3	5.9	15.3	13.0	11.8
	M + W	4.8	18.5	12.5	13.2	13.0	11.3	17.0	16.7	5.8	14.9	12.3	11.4
Luxembourg	Men	1.2	3.1	3.0	n	3.6	2.2	0.9	n	0.9	3.1	2.0	2.1
	Women	2.0	1.6	3.6	1.4	4.9	1.6	n	1.5	1.7	2.6	2.4	2.2
	M + W	1.6	2.4	3.3	0.7	4.2	1.9	0.4	0.7	1.3	2.9	2.2	2.1
Mexico	Men	1.6	1.8	1.4	1.8	1.7	0.4	1.7	4.7	1.6	1.8	2.0	1.8
	Women	1.1	1.4	0.7	1.9	3.1	1.5	2.3	3.4	1.1	1.7	1.2	1.4
	M + W	1.4	1.6	1.1	1.9	2.7	1.2	2.0	4.1	1.4	1.7	1.6	1.6
Netherlands	Men	2.8	3.9	6.0	1.1	2.6	1.3	0.8	1.9	1.7	2.3	2.5	2.2
	Women	2.9	5.3	4.2	0.8	2.2	2.1	1.2	1.8	1.3	2.3	2.5	2.1
	M + W	2.9	4.5	5.1	1.0	2.4	1.7	1.0	1.9	1.5	2.3	2.5	2.2
Poland	Men	1.6	17.4	20.4	32.3	16.6	12.1	14.3	8.8	3.1	16.8	12.7	11.1
	Women	0.8	17.5	14.6	25.9	15.3	12.0	7.7	8.3	1.9	15.5	11.7	10.1
	M + W	1.2	17.4	17.8	29.4	15.9	12.0	9.1	8.5	2.5	16.1	12.2	10.6
Portugal	Men	4.6	5.8	3.8	0.4	4.5	1.6	1.2	4.4	2.6	4.3	3.6	3.5
	Women	5.3	7.0	4.6	1.5	6.2	3.8	3.2	2.3	3.0	5.4	4.0	4.2
	M + W	5.0	6.3	4.2	0.9	5.4	2.8	2.4	3.2	2.8	4.8	3.8	3.9
Spain	Men	19.2	18.8	15.0	2.1	11.4	10.2	4.8	9.5	8.2	11.5	12.2	10.8
	Women	23.5	25.9	20.1	1.7	13.8	14.2	8.2	16.9	7.4	13.9	17.4	13.3
	M + W	21.0	21.5	17.3	1.9	12.6	12.3	6.7	13.4	7.8	12.7	14.8	12.0
Sweden	Men	19.4	22.1	11.2	0.6	8.5	7.5	0.8	2.1	1.3	7.5	5.8	5.1
	Women	18.7	17.7	12.4	1.0	7.2	4.8	0.8	2.5	1.7	5.3	4.6	4.0
	M + W	19.0	20.2	11.8	0.8	7.9	6.2	0.8	2.3	1.5	6.4	5.2	4.6
Switzerland	Men	n	m	m	n	m	m	n	m	n	m	m	2.8
	Women	n	m	m	n	m	m	m	m	n	m	m	2.9
	M + W	n	m	m	n	m	m	m	m	n	4.4	2.6	2.8
Turkey[1]	Men	m	m	m	m	m	m	m	m	6.1	12.3	7.0	8.1
	Women	m	m	m	m	m	m	m	m	3.3	4.5	3.0	3.6
	M + W	m	m	m	m	m	m	m	m	4.7	8.0	5.0	5.8
United Kingdom[1]	Men	m	m	m	m	m	m	m	m	7.0	8.1	6.5	7.2
	Women	m	m	m	m	m	m	m	m	4.4	4.1	3.9	4.1
	M + W	m	m	m	m	m	m	m	m	5.7	6.2	5.2	5.7
United States[1]	Men	6.9	8.8	6.0	1.8	4.8	3.8	1.0	2.1	2.6	4.1	3.4	3.3
	Women	7.8	6.8	7.2	1.5	5.6	4.8	0.9	1.7	2.1	3.7	3.7	3.2
	M + W	7.3	7.9	6.5	1.6	5.2	4.3	0.9	1.9	2.3	3.9	3.6	3.2
Country mean	**Men**	**5.5**	**13.8**	**11.5**	**5.3**	**7.3**	**6.2**	**4.2**	**4.7**	**3.4**	**8.0**	**6.6**	**5.9**
	Women	**5.5**	**12.3**	**9.7**	**5.0**	**7.5**	**6.9**	**5.0**	**5.3**	**2.8**	**6.9**	**6.4**	**5.3**
	M + W	**5.5**	**13.0**	**10.5**	**5.1**	**7.5**	**6.6**	**4.6**	**5.1**	**3.1**	**7.3**	**6.4**	**5.6**

1. Year of reference 1998.

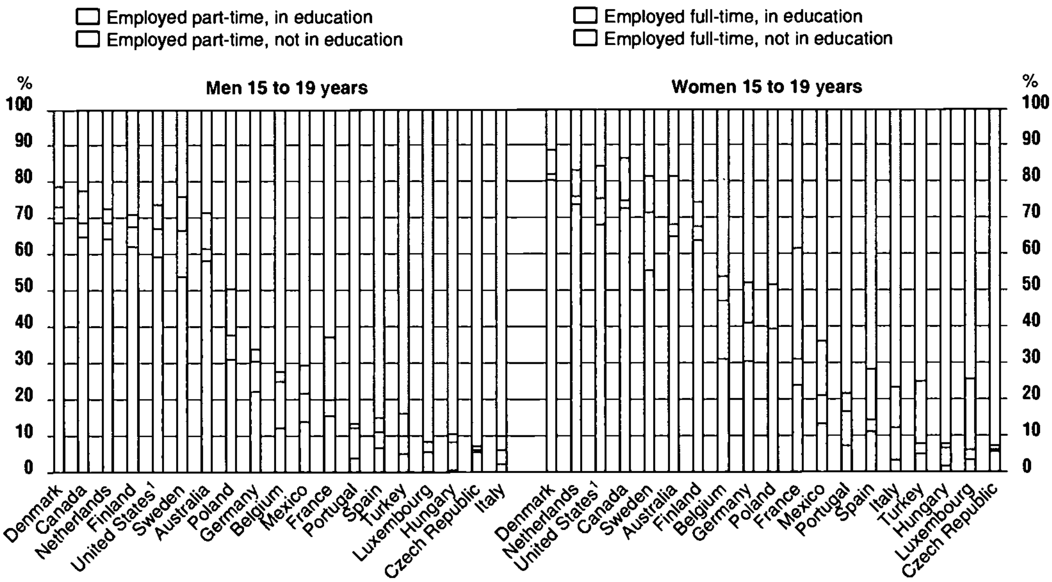
Source: OECD. See Annex 3 for national data sources.

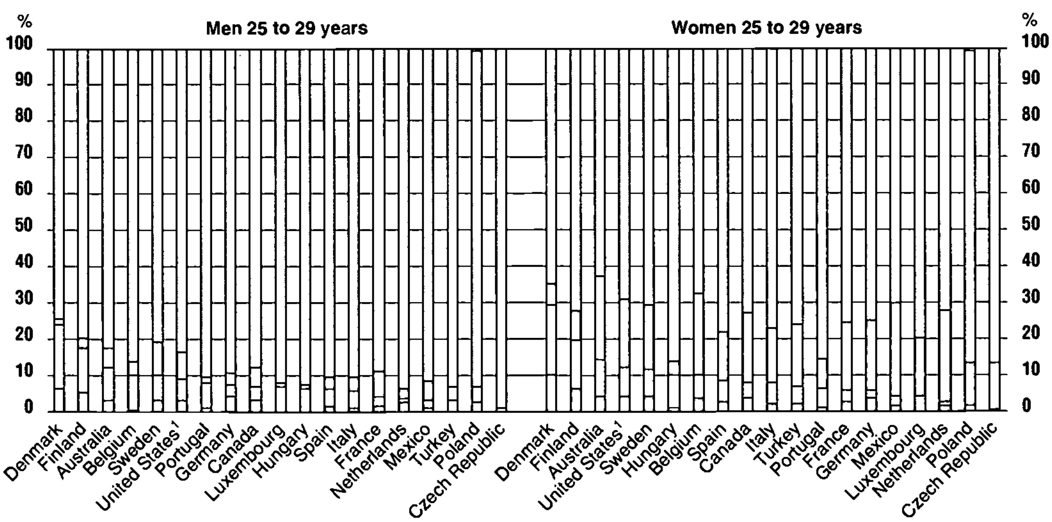
SPECIFIC SITUATION OF THE YOUTH POPULATION

- Before the age of 19, the situation of young people in employment varies widely between countries. In some countries, almost all those who are employed (a small fraction of the age cohort) have left the education system. In more than half of the countries reporting data, however, a large majority of those in employment are still in education as well, combining study with some form of employment. For those who combine work and education, employment tends to be part-time in more than 60 per cent of cases in almost every country.

Chart E4.1. **Full-time and part-time employment of the youth population (1999)**

By gender, age group and education status





1. Year of reference 1998.

Countries are ranked in descending order of men and women employed, in education.

Source: OECD. Table E4.1.

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POLICY CONTEXT

Do job opportunities for young people in education differ from those offered after completion of education with respect to part-time and temporary employment?

This indicator examines the pattern of employment among young people while they are still in education and just after they have left the education system. Part-time work is becoming more widespread, as are temporary jobs. But labour-market regulations differ widely between countries, as does the association between school and work. Those who are still in education naturally tend to combine their studies with what is often part-time or temporary employment, but it will usually be a subsidiary rather than a first main job.

To what extent do the jobs held by young people differ from those held by the labour force as a whole? By and large, does the trend towards more part-time or temporary employment particularly affect young people? Do young people leaving the education system, who are by definition job seekers, form a population that is specifically targeted by new forms of labour flexibility? Is the pressure of unemployment encouraging the development of these more insecure or financially less rewarding forms of employment? Any discussion of these questions must consider separately young people who have left the education system and young people still in education.

Another issue is the situation of young people who are no longer in education but who are not yet in employment. Entry to the labour market is often a difficult period of transition. While there has been a significant increase in the length of time spent in education, a significant proportion of young people are threatened with exclusion if they are neither in education nor in work, *i.e.*, are either unemployed or are in non-employment. This situation gives particular cause for concern for younger age groups, many of whom have no unemployment status or welfare cover (see A *Caring World*, OECD 1999).

EVIDENCE AND EXPLANATIONS

Part-time and temporary employment among young people aged 15 to 19 and 25 to 29

There appears to be a marked difference in the proportions of part-time employment among young people in education and those not in education.

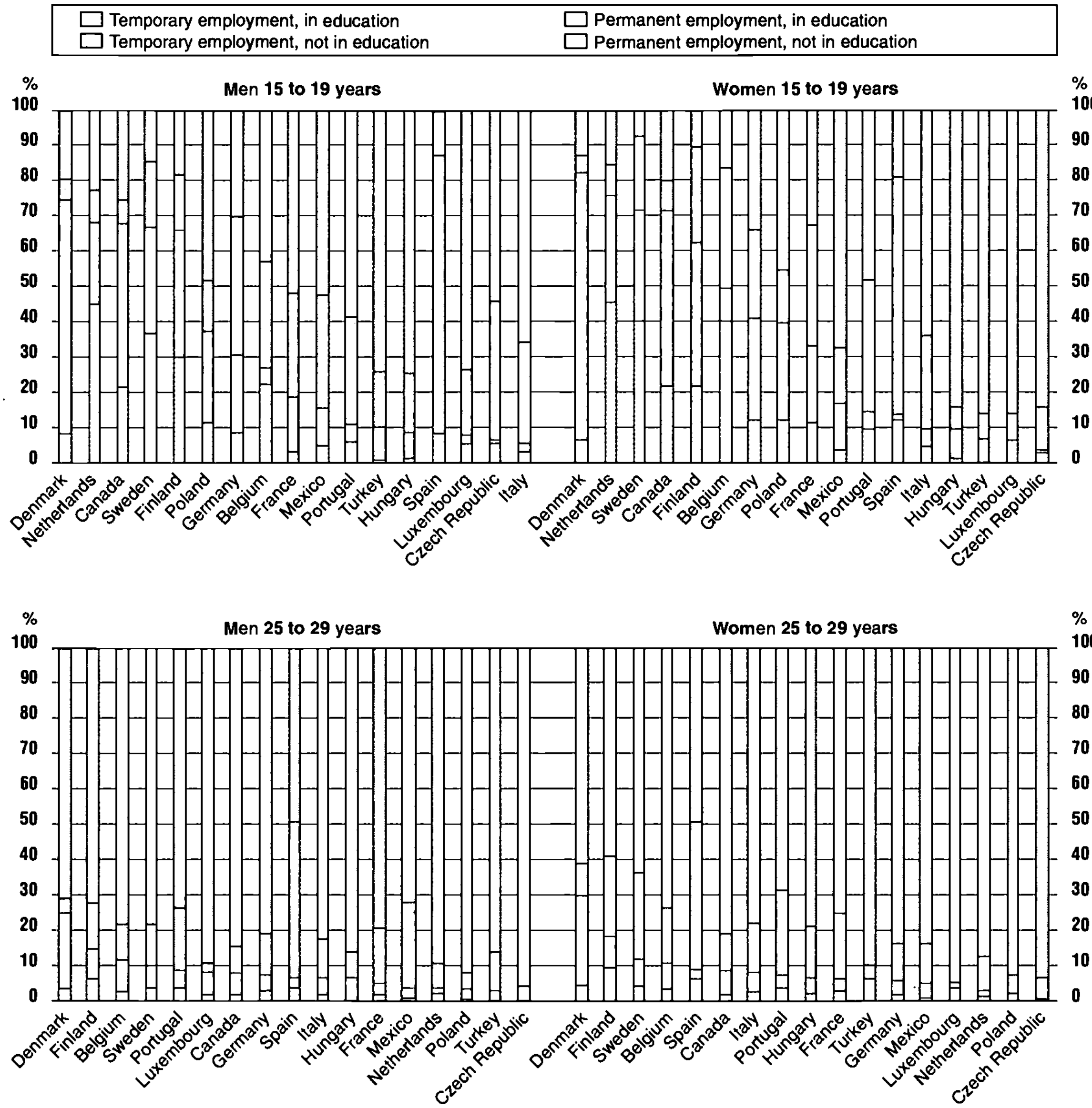
Before the age of 19, the situation of young people in employment varies widely between countries. In some countries, such as Italy, Hungary and Luxembourg, almost all those who are employed (a small fraction of the age cohort) have left the education system (Table E4.1). In more than half of the countries reporting data, however, a large majority (between 60 and over 80 per cent) of those in employment are still in education as well, combining study with some form of employment. The proportion of young women who study and have a job at the same time is everywhere higher than the proportion of young men in the same position, the average difference being more than 5 percentage points.

In the 15 to 19 age cohort, the ratio of part-time workers to the total of those employed varies...

For those who combine work and education, employment tends to be part-time in more than 60 per cent of cases in almost every country. Only Hungary, Italy and Portugal appear to be exceptions, with an infrequent occurrence of part-time work in general. Part-time employment is, on average, 5 percentage points more frequent among females aged 15 to 19 years, regardless of whether they are continuing their studies or have left education.

Chart E4.2. **Temporary and permanent employment of the youth population (1999)**

By gender, age group and education status



Countries are ranked in descending order of men and women employed, in education.

Source: OECD. Table E4.2.

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... whereas in the age cohort 25 to 29 years, the pattern of part-time work is similar to that in the adult population.

The transition from school to work is almost complete by the age of 29. Over 80 per cent, and very often over 90 per cent, of those with a job are no longer in education. Only Denmark and the Netherlands have around one quarter of their young employees still in education. There is little difference between the male and female population in this respect. However, part-time work is unevenly distributed between the genders in all countries. Whereas, on average, 5 per cent of men aged 25 to 29 are in

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part-time employment but not in education, this percentage is generally three to fives times higher among women (18 per cent on average). In this age cohort, the characteristics of part-time employment are similar to those of older adult age cohorts.

However, young people are employed on a temporary basis much more often than older people.

The proportion of temporary employment is highest among 15 to 19 year olds, whether that are in education or not in education. On average, 15 per cent of the total youth population in education and 24 per cent of the total youth population not in education are in temporary employment. This proportion is only 3 and 13 per cent, respectively, for the 25 to 29-year-old group. The fact that young people tend to be given more temporary contracts may be seen as an adjustment strategy or a mutual trial period for both employee and employer. There are also major disparities between countries in the frequency of temporary employment, presumably caused by differences in regulations and the institutional context rather than by the nature of the jobs available.

There are few gender disparities in the proportion of temporary and permanent employment for young men and women "in education" or "not in education" aged 15 to 29. For example, the proportion of young women aged 25 to 29 in permanent employment and not in education is 78 per cent, while the proportion for men is 80 per cent. Similarly, for both men and women aged 25 to 29 years in education, 3 per cent are in temporary employment, while 6 per cent are in permanent employment (Table E4.2).

Young people not in education or work

Most young people between 15 and 19 years of age are still at school. In many countries, a high percentage of those who are not, are either unemployed or not in the labour force.

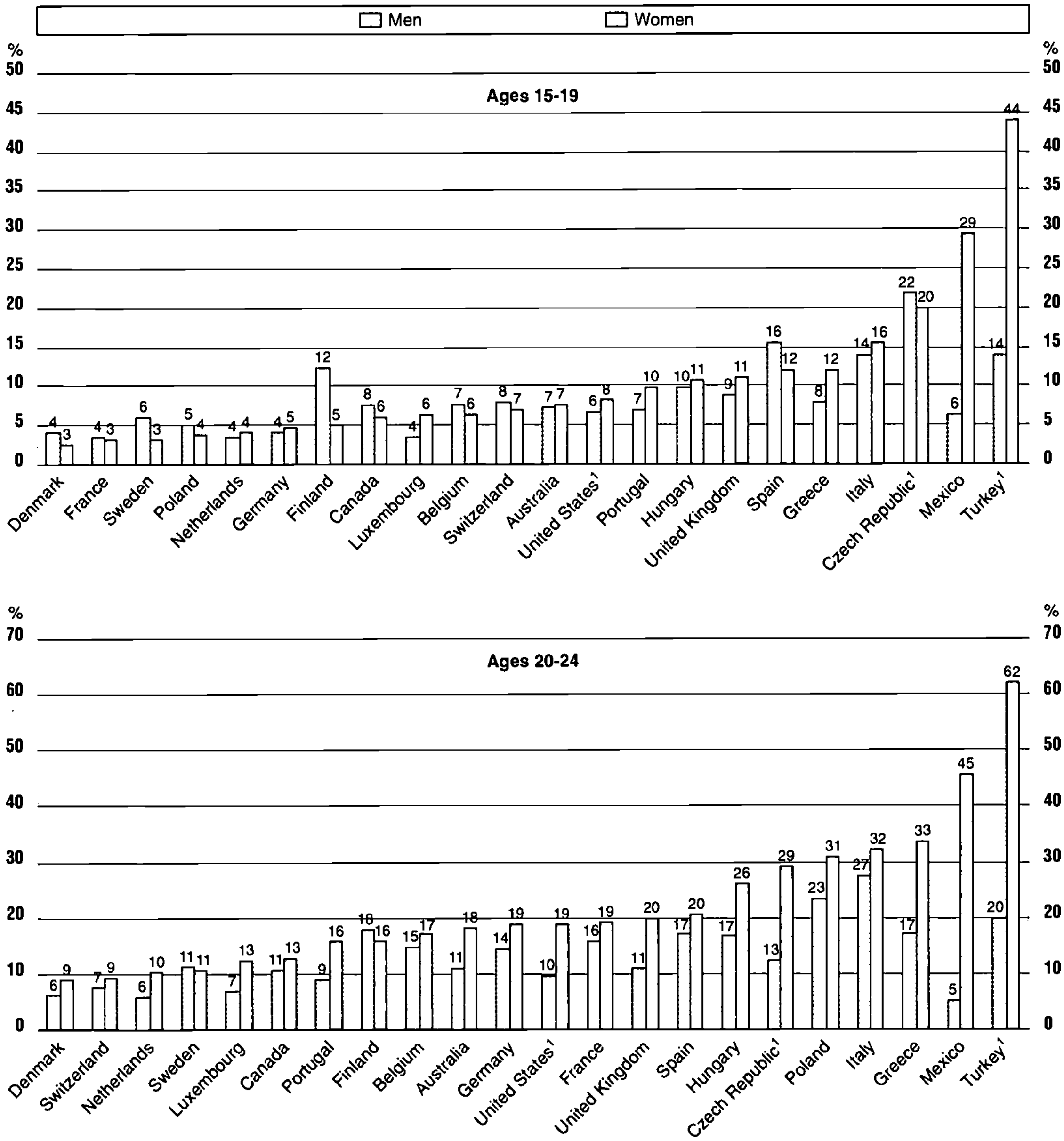
Between the ages of 15 and 19, over four out of five young people are in education in most countries. A small proportion of the age group are in work after they have left school, although this figure is as high as 10 or 20 per cent in some countries (Table E3.1).

There is, however, one group of young people who find themselves in adverse circumstances, being no longer in education but not yet in work. Some have unemployment status if they are actively seeking work, while those who are not doing so for some reason are considered to be in non-employment. Their reasons may be many and varied: discouragement owing to difficulty in finding work, or voluntary withdrawal because of family circumstances, travel, etc. In 14 out of 21 countries, the proportion of these young people is higher than the proportion of those with unemployment status.

To be out of education or out of employment is a very uncommon situation in Denmark, France and the Netherlands. Conversely, it is disturbingly common in the Czech Republic, Greece, Hungary, Italy, Mexico and Spain. In these countries, over 10 per cent of young people aged 15 to 19 are neither at school nor in work (Table E3.1). In other countries, the proportion is lower but not insignificant, ranging from 4 to 10 per cent. The problem mainly affects young men in the Czech Republic, Finland, Italy, Spain and Turkey and young women in the Czech Republic, Greece, Italy, Mexico, Spain and Turkey (Chart E4.3).

Chart E4.3. **Percentage of the youth population not in education or work (1999)**

By age group and gender



1. Year of reference 1998.

Countries are ranked in ascending order of women not in education or work.

Source: OECD. Tables E3.1*a*, *b*.

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Between the ages of 20 and 24, the scale of the problem grows but its nature also changes because most young people are entering the labour market at that time.

Between the ages of 20 and 24, the scale of the problem grows but its nature also changes. This is the age at which most young people are entering the labour market. Most of them have just completed their initial education. Entry to the job market often involves a phase of unemployment. The proportion of young men in this age group who are neither in education nor in work is around 13 per cent, over 5 percentage points higher than that of 15 to 19-year-olds. In countries where young people spend less time in education and enter the labour market earlier, the figure rises very little, as in the Czech Republic or Mexico. Unemployment among first-time labour-market entrants makes its full effect felt in Finland, France and Italy, where the proportion of young men neither in education nor in work is much higher among 20 to 24-year-olds than among 15 to 19-year-olds.

Among young women aged 20 to 24 years, the increase is even more spectacular since the average rate for all countries is 22 per cent, which is more than twice that of the younger group. In addition to the general phenomenon of unemployment among first-time labour-market entrants, there is still a significant withdrawal of women from the labour market in some countries.

DEFINITIONS AND METHODOLOGIES

The statistics presented here are calculated from labour force survey data on age-specific proportions of young people in each of the specified categories. The definitions of the various labour force statuses of those not in education (and not enrolled in work-study programmes) are based on the ILO guidelines. The data for this indicator were calculated from the special data collection on transition from education to work (see Indicator E3).

Table E4.1. **Part-time and full-time employment of the youth population (1999)**

By gender, age group and education status

	Age group	Young men employed[1] – In education – Part-time	Young men employed[1] – In education – Full-time	Young men employed[1] – Not in education – Part-time	Young men employed[1] – Not in education – Full-time	Young women employed[1] – In education – Part-time	Young women employed[1] – In education – Full-time	Young women employed[1] – Not in education – Part-time	Young women employed[1] – Not in education – Full-time	Total employed youth population[1] – In education – Part-time	Total employed youth population[1] – In education – Full-time	Total employed youth population[1] – Not in education – Part-time	Total employed youth population[1] – Not in education – Full-time
Australia	15-19	58	3	10	28	65	3	13	19	62	3	12	23
	20-24	15	9	9	67	21	11	17	52	18	10	13	60
	25-29	3	9	5	82	4	10	23	63	4	10	13	73
Belgium	15-19	12	13	2	72	31	16	7	46	21	15	5	59
	20-24	2	11	5	82	6	12	22	60	4	12	13	72
	25-29	1	9	4	86	4	6	22	68	2	8	13	77
Canada[2]	15-19	65	4	9	22	73	2	12	13	69	3	10	18
	20-24	19	5	9	68	27	6	16	52	23	5	12	60
	25-29	3	4	5	88	4	5	19	73	3	4	12	81
Czech Republic	15-19	5	1	1	93	5	1	1	93	4	1	3	92
	20-24	1	n	n	99	1	n	4	95	1	n	2	97
	25-29	n	n	1	99	n	n	13	87	n	n	5	95
Denmark	15-19	69	4	6	21	81	1	7	11	75	3	6	16
	20-24	19	15	5	61	31	10	7	52	25	13	6	56
	25-29	6	18	2	74	10	19	6	65	8	19	4	70
Finland[2]	15-19	62	5	3	29	64	4	7	26	63	4	5	27
	20-24	16	10	4	69	24	14	8	54	20	12	6	62
	25-29	5	12	3	80	7	13	8	72	6	13	5	76
France	15-19	15	5	17	63	24	7	31	38	19	6	23	53
	20-24	5	2	19	74	10	3	25	62	7	2	21	69
	25-29	2	3	7	89	3	3	19	75	2	3	12	83
Germany	15-19	22	8	3	66	31	10	11	48	26	9	7	58
	20-24	5	3	3	89	7	4	13	76	6	3	8	83
	25-29	4	3	3	89	4	2	19	75	4	3	11	83
Hungary	15-19	1	7	3	89	1	5	1	92	1	7	2	91
	20-24	1	7	1	92	1	11	2	85	1	9	2	89
	25-29	n	6	1	92	1	9	4	86	1	7	2	90
Italy	15-19	2	4	4	90	4	8	11	77	3	6	7	85
	20-24	1	5	4	90	3	6	13	78	2	5	7	85
	25-29	1	5	4	90	2	6	15	77	1	5	8	85
Luxembourg	15-19	6	3	n	92	3	3	19	74	4	3	9	84
	20-24	n	10	n	89	n	5	13	81	n	8	6	85
	25-29	n	7	1	92	n	4	16	80	n	6	7	87
Mexico[2]	15-19	14	7	8	71	13	8	15	64	14	8	10	68
	20-24	4	5	5	86	5	6	19	69	4	5	10	80
	25-29	1	2	5	92	2	3	25	70	1	2	12	84
Netherlands[2]	15-19	65	4	4	27	74	3	7	17	69	3	6	22
	20-24	24	3	3	70	24	4	14	58	24	3	8	64
	25-29	3	1	3	93	1	1	25	72	2	1	13	84
Poland[2]	15-19	31	7	13	49	39	n	12	48	34	4	13	49
	20-24	2	4	8	86	2	4	10	84	2	4	9	85
	25-29	n	3	4	93	n	2	12	86	n	2	7	90
Portugal	15-19	4	8	1	87	7	10	5	78	5	9	3	83
	20-24	2	9	2	88	3	9	5	82	3	9	3	85
	25-29	1	7	2	90	1	5	8	86	1	6	4	88
Spain	15-19	7	4	4	85	11	3	14	72	8	4	8	80
	20-24	4	5	3	88	9	7	14	71	6	6	8	81
	25-29	2	5	3	91	3	6	13	78	2	5	7	86
Sweden[2]	15-19	54	13	10	24	56	16	10	18	55	15	10	21
	20-24	8	8	11	74	12	10	19	59	10	9	15	67
	25-29	3	7	10	81	4	8	18	70	4	7	13	76
Switzerland	15-19	54	m	m	m	58	m	m	26	56	5	13	26
	20-24	12	m	m	79	10	m	11	76	11	5	7	78
	25-29	m	6	6	86	m	m	21	72	3	5	14	79
Turkey	15-19	5	5	6	84	5	3	17	75	5	4	10	81
	20-24	n	4	6	89	1	6	18	75	1	5	11	84
	25-29	n	3	4	93	2	5	17	76	1	3	7	89
United States[2, 3]	15-19	60	8	7	26	69	7	9	15	64	7	8	21
	20-24	14	10	8	68	20	11	17	52	17	10	12	61
	25-29	3	6	7	83	4	8	18	69	4	7	12	77
Country mean	**15-19**	**29**	**6**	**6**	**56**	**34**	**6**	**10**	**45**	**31**	**6**	**8**	**50**
	20-24	**8**	**7**	**6**	**80**	**11**	**8**	**13**	**69**	**10**	**7**	**9**	**75**
	25-29	**3**	**6**	**4**	**88**	**3**	**6**	**16**	**75**	**3**	**6**	**9**	**83**

1. Excludes students in work-study programmes.
2. Work-study programmes, if existing, are not separated.
3. Year of reference 1998.

Source: OECD. See Annex 3 for national data sources.

E4

Table E4.2. **Temporary and permanent employment of the youth population (1999)**

By gender, age group and education status

	Age group	Young men employed[1]				Young women employed[1]				Total employed youth population[1]			
		In education		Not in education		In education		Not in education		In education		Not in education	
		Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent
Belgium	15-19	22	5	30	43	40	10	34	17	31	7	32	30
	20-24	5	8	23	64	8	9	30	52	6	9	26	59
	25-29	2	9	10	78	3	7	16	74	3	8	13	76
Canada[2]	15-19	22	46	7	25	22	50	9	20	22	48	8	23
	20-24	7	17	11	65	10	23	10	57	9	20	10	61
	25-29	2	6	8	84	2	7	11	81	2	6	9	83
Czech Republic	15-19	5	1	40	54	3	1	12	84	4	1	29	66
	20-24	1	5	56	37	n	n	8	91	n	1	11	88
	25-29	n	n	4	96	n	n	6	93	n	n	5	95
Denmark	15-19	8	66	6	20	6	76	5	13	7	71	5	16
	20-24	5	30	6	59	8	33	13	45	7	32	10	51
	25-29	3	22	4	71	4	25	9	61	4	23	6	66
Finland[2]	15-19	30	36	16	18	22	40	27	10	26	38	22	14
	20-24	11	12	19	58	14	19	32	36	12	15	25	48
	25-29	6	9	13	72	9	9	23	59	7	9	17	67
France	15-19	3	16	29	52	11	22	34	33	7	18	31	44
	20-24	4	3	32	61	7	6	36	51	5	4	34	57
	25-29	2	3	16	79	3	3	19	75	2	3	17	78
Germany	15-19	9	22	40	30	12	29	25	34	10	25	33	32
	20-24	3	5	33	59	4	7	16	73	3	6	25	65
	25-29	3	5	12	81	2	4	10	84	2	4	11	82
Hungary	15-19	1	7	17	75	2	5	14	79	2	6	16	77
	20-24	n	7	9	84	n	11	9	79	n	9	9	82
	25-29	n	6	7	86	n	8	7	84	n	7	7	85
Italy	15-19	3	2	29	66	5	5	26	64	4	3	28	65
	20-24	3	3	19	75	5	5	23	68	3	4	21	72
	25-29	2	5	11	82	3	6	14	78	2	5	12	80
Luxembourg	15-19	5	2	19	74	6	n	8	86	6	1	14	79
	20-24	6	5	4	85	n	5	9	85	3	5	7	85
	25-29	2	6	2	90	n	4	2	94	1	5	2	92
Mexico[2]	15-19	5	10	32	52	4	13	16	67	5	11	26	58
	20-24	2	6	26	67	3	9	15	73	2	7	22	69
	25-29	1	3	24	72	1	4	12	84	1	3	20	76
Netherlands[2]	15-19	45	23	9	23	46	30	8	16	45	27	9	19
	20-24	17	10	12	61	17	10	14	58	17	10	13	60
	25-29	2	2	7	89	1	2	10	87	2	2	8	88
Poland[2]	15-19	11	26	15	48	12	27	15	45	12	26	15	47
	20-24	2	4	9	85	1	5	11	83	2	4	10	84
	25-29	n	3	5	92	n	2	5	93	n	2	5	92
Portugal	15-19	6	5	30	59	10	5	37	48	7	5	33	54
	20-24	5	6	33	57	7	6	33	54	6	6	33	55
	25-29	4	5	18	74	4	4	24	69	4	4	21	71
Spain	15-19	8	n	79	12	12	2	67	19	10	1	74	15
	20-24	7	2	61	30	11	3	56	30	9	3	59	30
	25-29	4	3	44	49	6	3	42	49	5	3	43	49
Sweden[2]	15-19	37	30	19	15	40	32	21	7	39	31	20	11
	20-24	7	9	23	62	11	11	38	41	9	10	30	52
	25-29	4	6	12	78	4	8	25	64	4	7	18	72
Switzerland	15-19	m	m	m	44	m	47	m	32	m	43	m	36
	20-24	m	14	9	73	m	10	12	76	m	12	11	74
	25-29	m	7	7	84	m	6	8	85	m	6	8	84
Turkey	15-19	1	9	16	74	n	7	7	86	n	9	13	78
	20-24	n	9	14	82	n	7	4	89	n	5	10	85
	25-29	n	3	11	86	n	6	4	89	n	4	10	87
Country mean	**15-19**	**13**	**19**	**25**	**43**	**16**	**24**	**21**	**42**	**15**	**21**	**24**	**42**
	20-24	**6**	**9**	**22**	**65**	**8**	**11**	**20**	**63**	**7**	**9**	**20**	**65**
	25-29	**3**	**6**	**12**	**80**	**3**	**6**	**14**	**78**	**3**	**6**	**13**	**79**

1. Excludes students in work-study programmes.
2. Work study programmes, if existing, are not separated.

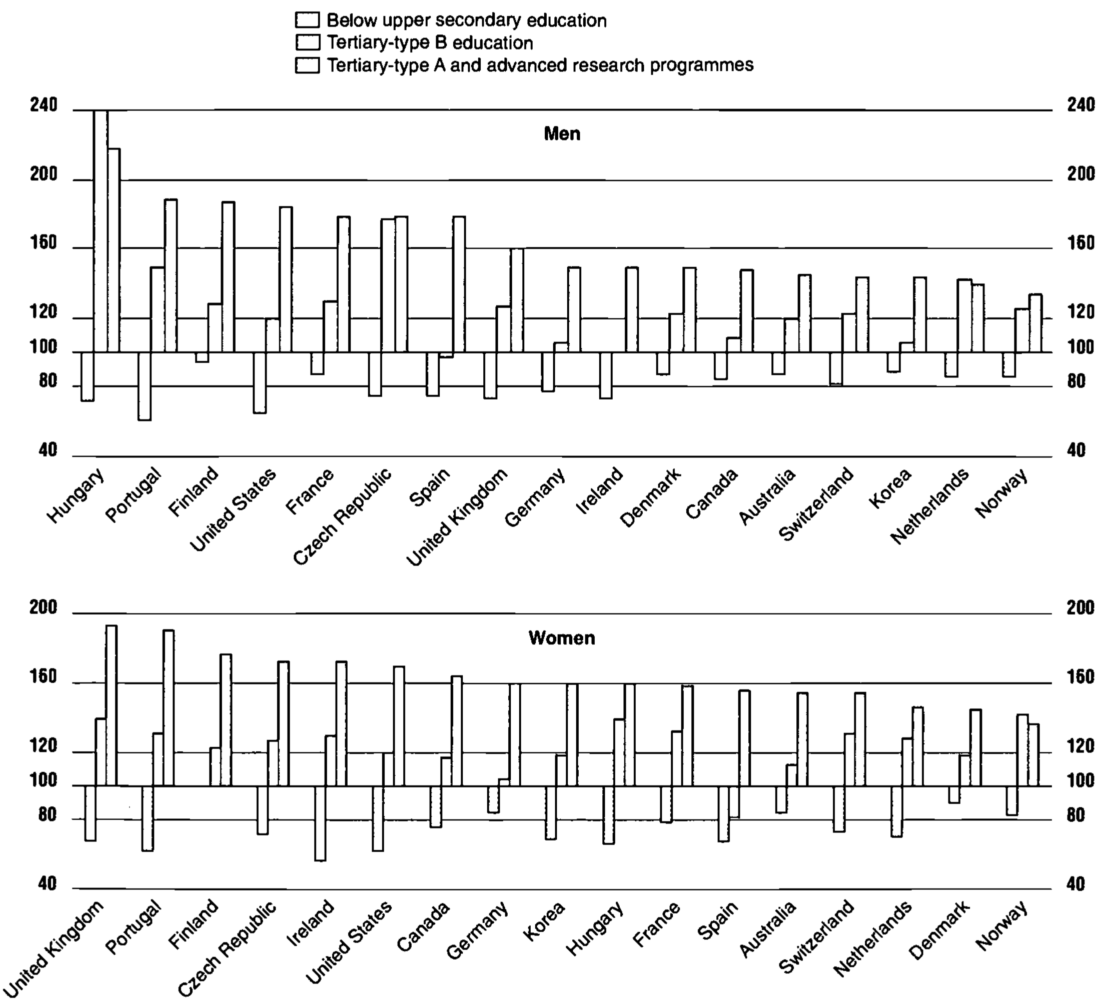
Source: OECD. See Annex 3 for national data sources.

EARNINGS AND EDUCATIONAL ATTAINMENT

- Education and earnings are positively linked. Upper secondary and post-secondary non-tertiary education form a break point in many countries, beyond which additional education attracts a particularly high premium. In all countries, graduates of tertiary-level education earn substantially more than upper secondary and post-secondary non-tertiary graduates. Earnings differentials between tertiary and upper secondary education are generally more pronounced than those between upper secondary and lower secondary or below.
- Earnings of people with below upper secondary education tend to be 60 to 90 per cent of those of upper secondary and post-secondary non-tertiary graduates.
- Women still earn less than men with similar levels of educational attainment.
- Tertiary-type A and advanced research qualifications enhance earnings compared to upper secondary and post-secondary non-tertiary qualifications by at least 10 per cent more for women than for men in seven countries, whereas the reverse is true in six countries.

Chart E5.1. **Relative earnings with income from employment (1999)**

By level of educational attainment and gender for the population 25 to 64 years of age (ISCED 3/4 =100)



Countries are ranked in descending order of relative earnings for the population having attained the level of tertiary-type A and advanced research programmes.

Source: OECD. Table E5.1.

E5

POLICY CONTEXT

This indicator shows the earnings of workers of differing educational attainment relative to those with upper secondary attainment.

One way in which markets provide incentives for workers to develop and maintain appropriate levels of skills is through wage differentials, in particular through the enhanced earnings accorded to persons completing additional education. The pursuit of higher levels of education can also be viewed as an investment in human capital. Human capital is the stock of skills that individuals maintain or develop, usually through education or training, and then offer in retum for earnings in the labour market. The higher the earnings that result from increases in human capital, the higher are the returns on that investment and the premium paid for enhanced skills and/or for higher productivity. Earnings differentials are a measure of the current financial incentives in a particular country for an individual to invest in further education. Earnings differentials according to educational attainment may also reflect differences in the supply of educational programmes at different levels or the barriers in access to those programmes.

EVIDENCE AND EXPLANATIONS

Education and earnings for men and women

Education and earnings are positively linked, whatever the type of socio-economic system or the degree of economic development.

A substantial body of empirical research has shown the statistically significant relationships between educational attainment and earnings. In many of these studies, educational attainment is regarded not only as a qualification that offers access to particular kinds of jobs and careers but also – in the absence of variables that measure skills directly – as an indicator of individuals' knowledge and skills.

The economic benefit of completing tertiary education can be seen by comparing the ratio of the mean annual earnings of those who attended and graduated from tertiary education with the mean annual earnings of upper secondary and post-secondary non-tertiary graduates. The earnings disadvantage from not completing upper secondary or post-secondary non-tertiary education is apparent from a similar comparison (Chart E5.1 and Table E5.1). Variations in relative earnings (before taxes) between countries reflect a number of factors, including skill demands in the labour force, minimum wage legislation, the strength of unions, the coverage of collective bargaining agreements, the supply of workers at the various levels of educational attainment, the range of work experience of workers with high and low educational attainment, the distribution of employment between occupations and the relative incidence of part-time and part-year work among workers with varying levels of educational attainment.

Upper secondary education is a break point in many countries, beyond which additional education attracts a particularly high premium.

The data in Table E5.1 show a strong positive relationship between educational attainment and earnings. In all countries, graduates of tertiary-level education earn substantially more than upper secondary and post-secondary non-tertiary graduates. Earnings differentials between tertiary and upper secondary and post-secondary non-tertiary education are generally more pronounced than those between upper secondary and lower secondary or below, suggesting that upper secondary and post-secondary non-tertiary education form a break-point in many countries, beyond which additional education attracts a particularly high premium. Among those countries which report gross earnings, the earnings premium for men aged 25 to 64 years with tertiary-level education ranges from 35 per cent or less in Canada, Denmark, Germany, Ireland, Korea, Norway and Switzerland, to 75 per cent or more in the Czech Republic, Hungary, Portugal and the United States (Table E5.1).

For women in the same age group, the premium for tertiary over upper secondary education ranges from around 30 per cent in Denmark, Germany, Italy, New Zealand and Sweden to more than 70 per cent in the Czech Republic, Portugal and the United Kingdom. Tertiary education enhances earnings relative to upper secondary education more for women than for men in Australia, Canada, Germany, Ireland, Korea, the Netherlands, Norway, Switzerland and the United Kingdom, whereas the reverse is true in the remaining countries, especially in Hungary and Italy.

Earnings of people with below upper secondary education tend to be 60 to 90 per cent of those of upper secondary and post-secondary non-tertiary graduates.

Earnings of men and women with below upper secondary education tend to be between 60 and 90 per cent of those who have completed upper secondary and post-secondary non-tertiary education. In 14 out of 20 OECD countries, men with lower levels of education fare slightly better than women relative to individuals of the same gender who have completed upper secondary and post-secondary non-tertiary education.

The earnings data shown in this indicator differ between countries in a number of ways that may render some country-to-country comparisons of relative earnings unreliable. Caution should therefore be exercised in interpreting the results. In particular, in countries reporting annual earnings, differences in the incidence of part-year work among individuals with different levels of educational attainment will have an effect on relative earnings that is not reflected in the data for countries reporting weekly or monthly earnings (see definitions below).

Education and gender disparity in earnings

Women still earn less than men with similar levels of educational attainment.

Although both men and women with upper secondary, post-secondary non-tertiary or tertiary attainment have substantial earnings advantages compared with those of the same gender who do not complete upper secondary education, earnings differentials between men and women with the same educational attainment remain substantial, reinforced by the frequency of part-time work for women.

In some countries the gender gap in earnings narrows with increasing educational attainment; in others it widens.

When all levels of education are taken together, women's earnings between the ages of 30 and 44 range from about one-half of those of men in Switzerland and the United Kingdom to around 80 per cent of those of men in Hungary and Spain (Table E5.2). In a number of countries earnings differentials between men and women narrow with increasing educational attainment. In some other countries, by contrast, including Hungary and Italy, the reverse relationship tends to be true: earnings differences between men and women tend to be particularly high at the tertiary level. Thus, although higher educational attainment is generally associated with higher earnings for both men and women, it does not seem to contribute consistently to reductions in gender inequality in earnings.

Various factors may explain the gap in earnings between genders.

Some of the gap in earnings between men and women may be explained by differences between men and women in their choices of career and occupation, differences in the amount of time that men and women spend in the labour force, and the relatively high incidence of part-time work among women.

There may be a movement towards more equality of earnings between younger men and women.

Earnings data by age suggest that there may be a movement towards more equality of average earnings between men and women across all levels of education. This result might also be influenced by the increased proportion of women among younger tertiary graduates. In seven out of 20 countries, the ratio of female to male earnings at the tertiary-type A and advanced research programmes levels is at least 9 percentage points higher among 30 to 44-year-olds than among 55 to 64-year-olds (Table E5.2). Finland, Hungary and the United Kingdom are the only countries where the gender gap in earnings is considerably wider for younger than for older workers. Although the trend towards gender equality in earnings is less obvious for the lower levels of educational attainment, it is clearly reflected in data on tertiary graduates.

DEFINITIONS AND METHODOLOGIES

Data are derived from national labour force surveys (for details see Annex 3).

Relative earnings from employment are defined as the mean earnings (income from work before taxes) of persons at a given level of educational attainment divided by the mean earnings of persons with upper secondary education. This ratio is then multiplied by 100. The estimates are restricted to individuals with income from employment during the reference period.

Earnings data in Table E5.1 are annual for most countries; for France, Spain and Switzerland they are monthly. In the case of France, data cover the earnings of employees only. The Spanish data exclude people who work fewer than fifteen hours a week.

The observed differences in relative earnings between countries therefore reflect variations not only in wage rates but also in coverage, in the number of weeks worked per year and in hours worked per week. Since lower educational attainment is associated with fewer hours of work (in particular with part-time work) and with less stable employment (more likelihood of temporary employment or more susceptibility to unemployment over the course of a year), the relative earnings figures shown for higher educational attainment in the tables and charts will be greater than what would be evident from an examination of relative rates of pay. The observed differences in relative earnings of men and women within a country can likewise be affected by some of these factors.

Table E5.1. **Relative earnings of the population with income from employment**

By level of educational attainment and gender for the populations 25 to 64 and 30 to 44 years of age (upper secondary education = 100)

			Below upper secondary education		Tertiary-type B		Tertiary-type A and advanced research programmes		Tertiary education	
			25-64	30-44	25-64	30-44	25-64	30-44	25-64	30-44
Australia	1997	Men	87	83	120	116	144	138	136	131
		Women	85	84	113	112	154	154	137	138
		M + W	79	75	103	101	136	131	124	120
Canada	1997	Men	84	81	109	112	148	143	130	128
		Women	76	69	116	118	164	165	137	138
		M + W	83	79	106	109	152	149	128	66
Czech Republic	1999	Men	75	77	177	182	178	176	178	177
		Women	72	75	127	124	172	176	170	174
		M + W	68	70	151	151	180	182	179	181
Denmark	1998	Men	87	85	122	118	148	143	132	129
		Women	89	90	118	114	144	146	124	121
		M + W	86	85	113	108	149	145	124	120
Finland	1997	Men	94	91	128	124	186	172	159	149
		Women	100	98	122	121	176	170	143	139
		M + W	97	95	120	115	183	170	148	139
France	1999	Men	88	86	128	137	178	181	159	163
		Women	79	81	131	139	158	165	145	152
		M + W	84	84	125	133	169	174	150	155
Germany	1998	Men	77	63	105	101	149	131	126	116
		Women	85	68	104	106	160	167	128	134
		M + W	78	62	106	104	157	144	130	123
Hungary	1999	Men	72	74	240	220	218	222	218	222
		Women	67	71	138	141	159	160	159	160
		M + W	68	70	178	158	184	182	184	182
Ireland*	1997	Men	72	72	100	104	149	136	131	123
		Women	57	55	129	142	171	155	156	151
		M + W	75	75	114	124	165	150	146	140
Italy	1998	Men	54	55	x	x	x	x	138	142
		Women	61	56	x	x	x	x	115	114
		M + W	58	57	x	x	x	x	127	126
Korea	1998	Men	88	90	105	109	143	136	132	129
		Women	69	75	118	138	160	181	141	164
		M + W	78	80	106	113	147	142	135	134
Netherlands	1997	Men	86	85	142	128	138	130	139	130
		Women	71	71	128	133	145	150	143	148
		M + W	83	83	136	129	141	136	141	135
New Zealand	1999	Men	76	74	x	x	x	x	137	135
		Women	74	73	x	x	x	x	129	130
		M + W	76	74	x	x	x	x	136	136
Norway	1998	Men	85	89	125	130	133	135	133	134
		Women	84	88	142	144	136	137	136	138
		M + W	84	90	129	135	132	132	132	132
Portugal	1998	Men	61	57	149	153	188	192	178	183
		Women	62	59	131	136	190	209	171	186
		M + W	62	58	140	144	192	201	177	186
Spain	1996	Men	75	76	96	101	178	156	154	139
		Women	68	66	82	90	155	156	143	148
		M + W	80	77	97	103	167	152	151	141
Sweden	1998	Men	87	87	x	x	x	x	136	138
		Women	89	87	x	x	x	x	125	121
		M + W	89	89	x	x	x	x	130	129
Switzerland	1999	Men	81	77	122	124	144	140	135	133
		Women	73	80	131	133	154	160	145	151
		M + W	75	76	140	142	161	157	153	151
United Kingdom	1999	Men	73	73	126	123	159	165	149	151
		Women	68	63	139	137	193	195	173	173
		M + W	65	65	128	125	171	176	157	158
United States	1999	Men	65	63	119	123	183	180	176	173
		Women	63	65	120	120	170	177	163	170
		M + W	67	66	118	120	180	178	173	171
Country mean		**Men**	**78**	**77**	**130**	**130**	**163**	**157**	**149**	**146**
		Women	**75**	**74**	**123**	**126**	**162**	**166**	**144**	**147**
		M + W	**77**	**76**	**124**	**124**	**163**	**159**	**146**	**141**

* See Annex 3 for notes.

Source: OECD. See Annex 3 for national data sources.

E5

Table E5.2. **Differences in earnings between women and men**

Average annual earnings of women as a percentage of men, by level of educational attainment for the populations 30 to 44 and 55 to 64 years of age

		Below upper secondary education		Upper secondary and post-secondary non-tertiary education		Tertiary-type B education		Tertiary-type A and advanced research programmes		All levels of education	
		30-44	55-64	30-44	55-64	30-44	55-64	30-44	55-64	30-44	55-64
Australia	1997	60	55	59	54	57	59	66	57	61	56
Canada	1997	52	53	61	57	64	55	70	58	64	55
Czech Republic	1999	66	58	67	64	45	62	67	63	63	61
Denmark	1998	76	66	72	67	69	65	73	70	73	64
Finland	1997	76	80	71	78	69	76	70	71	66	73
France	1999	70	62	75	69	76	72	68	64	74	60
Germany	1998	70	86	64	63	67	70	82	62	67	56
Hungary	1999	79	77	82	96	53	115	59	69	76	80
Ireland*	1997	48	35	62	45	85	44	71	90	70	49
Italy	1998	71	70	69	43	x	x	56	45	73	57
Korea	1998	57	62	69	70	87	96	92	99	67	50
Netherlands	1997	46	43	55	50	57	39	63	50	55	45
New Zealand	1999	60	53	61	57	x	x	58	63	60	57
Norway	1998	59	61	60	61	66	79	61	62	61	60
Portugal	1998	73	70	71	69	63	60	77	70	73	67
Spain	1996	65	m	75	m	67	m	75	m	81	m
Sweden	1998	73	72	73	68	x	x	64	66	71	69
Switzerland	1999	55	44	53	47	57	45	61	49	52	41
United Kingdom	1999	44	55	52	51	58	59	61	80	53	56
United States	1999	64	51	61	60	60	50	60	45	62	49
Country mean		**63**	**61**	**66**	**62**	**65**	**65**	**68**	**65**	**66**	**58**

* See Annex 3 for notes.
Source: OECD. See Annex 3 for national data sources.

LEARNING OUTCOMES OF EDUCATION

F

For policy-makers in many OECD countries, international comparisons of student achievement have become an essential tool for assessing the performance of their countries' education systems and the adequacy of their students' preparation for participation in an increasingly global world. Such comparisons offer an external point of reference for the objective evaluation of education systems' effectiveness.

In response to growing demand for international comparisons of educational outcomes, the OECD has launched the Programme for International Student Assessment (PISA). PISA represents a new commitment by the governments of OECD countries to monitor the outcomes of education systems in terms of student achievement on a regular basis and within a common framework that is internationally accepted. PISA aims at providing a new basis for policy dialogue and for collaboration in defining and operationalising educational goals in innovative ways that reflect judgements about the skills that are relevant to adult life. It provides inputs for standard-setting and evaluation; insights into the factors which contribute to the development of competencies, and into similarities and differences between countries relating to the way in which these factors operate. It also provides a better understanding of the causes and consequences of observed skill gaps. By supporting a shift in focus from the inputs into education systems and institutions to the outcomes of learning, PISA seeks to assist policy-makers to bring about improvements in schooling and in the preparation of young people for adult life at a time of rapid change and increasing global interdependence.

While the first results from PISA will become available only in December 2001, the International Association for the Evaluation of Educational Achievement's (IEA) Third International Mathematics and Science Study (TIMSS) already provides a basis for comparisons of the mathematics and science achievement of students around the age of 13 years. Comparisons of achievement in mathematics and science are of particular relevance since mathematical and scientific knowledge and skills provide a foundation on which students may acquire the additional technical and scientific skills that are considered crucial to their full understanding of important social issues of the modern age, to their future success in a technological world, and to countries' future economic competitiveness. Since TIMSS was recently repeated (TIMSS-R), *Education at a Glance* will, for the first time, present information on trends in student achievement in mathematics and science.

Results from the International Adult Literacy Survey, which was conducted by Statistics Canada and the OECD between 1994 and 1998, can be used to examine interrelationships between the distribution of skills in the adult population and important social and economic variables. Respondents in this survey were asked to carry out various tasks that might be encountered in everyday life. Three scales of literacy were devised and tested: "prose literacy" (the knowledge and skills required to understand and use information from texts, such as editorials, news stories, brochures and instruction manuals); "document literacy" (the knowledge and skills required to locate and use information contained in various formats such as job applications, payroll forms, transportation timetables, maps, tables and graphics); and "quantitative literacy" (the knowledge and skills required to apply arithmetical operations to numbers embedded in printed materials, such as balancing a cheque-book, calculating a tip, completing an order form or determining the amount of interest on a loan from an advertisement).

Indicator F1 compares the mathematics and science achievement of 8th-grade students in 1999 (in TIMSS-R) with that of 8th-grade students in 1995 (in TIMSS). This indicator examines the differences in achievement scores between the two points in time, as well as the differences in countries' standings relative to the average of participating OECD countries.

Indicator F2 examines the change in the variation in students' achievement scores between 1995 and 1999. Comparisons between the range of achievement within countries (indicator F2) and changes in their average performance (indicator F1) show, at least in some countries, that improvement in overall performance can be attained without an increase in internal differences.

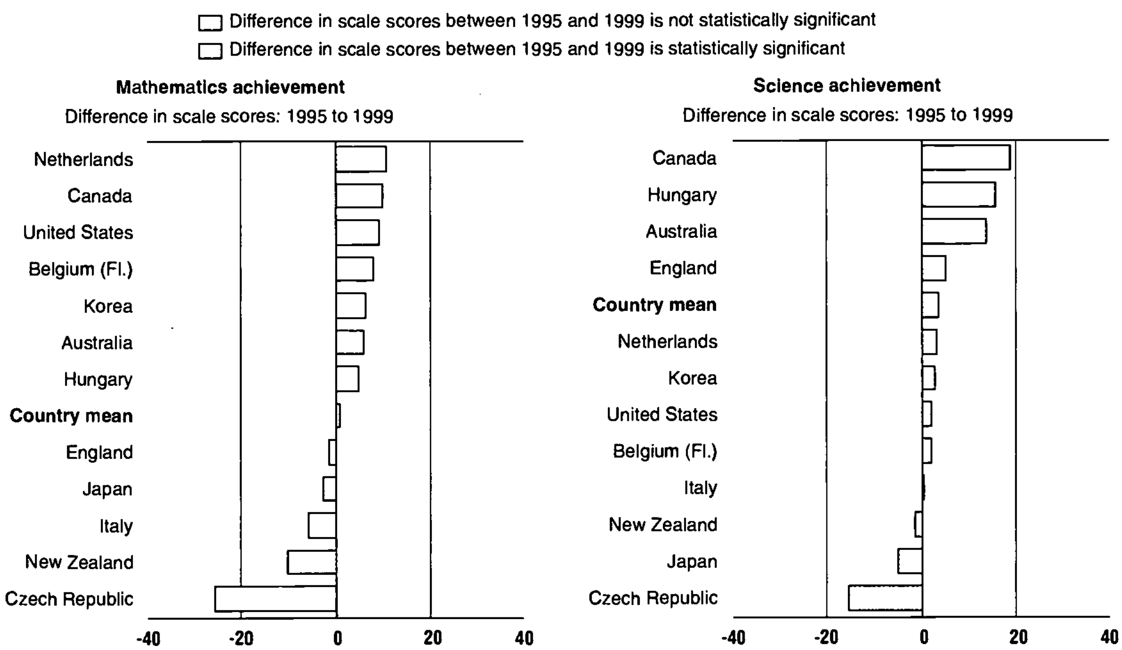
Indicator F3 takes indicator F2 further by comparing the distribution of literacy skills in the adult population with the distribution of individual income. This is one way of looking at the consequences of low levels of knowledge and skills over the course of the lifecycle.

Finally, **indicator F4** explores gender differences in the mathematics and science achievement of 8th-grade students in 1999, also reflecting briefly on trends in gender differences in achievement since 1995.

TRENDS IN MEAN MATHEMATICS AND SCIENCE ACHIEVEMENT IN THE 8TH GRADE (1995 and 1999)

- In science, countries generally witnessed an increase in mean performance between 1995 and 1999. In two countries, this difference is statistically significant.
- In 1995, science students in Hungary performed around the OECD country mean, while in 1999 Hungary joined Japan and Korea in the group of countries performing significantly above the country mean. Canada moved from significantly below the country mean to a level comparable to the country mean.
- In mathematics, the picture is more varied, with a roughly equal number of countries seeing increases and decreases in performance levels.

Chart F1.1. **Trends in mean achievement scores in the 8th grade, by subject (1995 and 1999)**



Note: Data presented for 1995 have been re-scaled in order to allow comparison with 1999 data.
Countries are ranked in descending order of the difference in mean scale scores between 1995 and 1999.
Source: IEA TIMSS (1995) and TIMSS-R (1999). Table F1.1.

F1

POLICY CONTEXT

This indicator shows changes in mean achievement in mathematics and science between 1995 and 1999.

Knowledge and skills in mathematics and science are an important outcome of education. Many policy-makers in OECD countries view students' skills in these subject areas as important factors in their countries' future economic competitiveness, and are therefore increasingly focusing on enhancing mathematical and scientific literacy. Aside from workplace requirements, mathematical and scientific literacy are important for understanding the environmental, medical, economic and other issues that confront modern societies, which rely heavily on technological and scientific advances.

Past editions of *Education at a Glance* have presented a variety of indicators on student performance in mathematics and science and on factors that may affect performance, drawing upon data from the Third International Mathematics and Science Study (TIMSS) that was conducted in 1995. This indicator expands upon these presentations by providing a picture of how 8th-grade mathematics and science performance has changed over a four-year period. The indicator draws upon data from the recently released results of the repeat of TIMSS (TIMSS-R) in 1999.

EVIDENCE AND EXPLANATIONS

In science, countries generally witnessed an increase in mean performance levels...

When examining trends in student achievement, everyone hopes to see improvements in test scores. In nine out of 12 countries, 8th-grade science achievement increased between 1995 and 1999, although only in two countries at a level that is statistically significant. On average, student achievement scores in Canada increased by 19 points and in Hungary by 15 points (Chart F1.1).

... and in two countries, this difference is significant.

One way to gauge the magnitude of the observed differences in the performance of 8th-grade students over the four-year period is to compare them with the average progress which students achieve over a school year. The latter can be approximated to the difference in achievement between students in the 7th and 8th grades which, in 1995, amounted to 39 points in science and 33 points in mathematics achievement. By this standard, the increase in Canada's mean science achievement between 1995 and 1999 is equivalent to about half the difference between the 7th and 8th-grade performance levels.

In 1995, science students in Hungary performed around the OECD country mean, while in 1999 they performed significantly above...

Another means by which countries can gauge the magnitude of change in achievement scores is to examine their improvement in ranking relative to the average achievement scores of the other 11 participating OECD countries (Chart F1.2). In 1995, science students in Hungary performed around the OECD country mean, while in 1999 Hungary joined Japan and Korea in the group of countries performing significantly above the country mean.

... and Canada moved from significantly below the country mean to a level comparable to the country mean.

Canada, previously significantly below the OECD country mean in science achievement, moved to a level comparable to the country mean in 1999. In both Canada and Hungary, there was also a significant increase in overall performance in science. On the other hand, the Czech Republic moved from significantly above the country mean in 1995 to a level comparable to the country mean in 1999. Italy, New Zealand and the United States remained significantly below the country mean for science achievement.

Chart F1.2. **Eighth-grade mean scores relative to the country mean, by subject (1995 and 1999)**

Mean score is significantly higher than the country mean
Mean score is not significantly different than the country mean
Mean score is significantly lower than the country mean

Mathematics achievement

1995	Mean scale score	Difference from country mean
Japan	581	53
Korea	581	53
Belgium (Fl.)	550	22
Czech Republic	546	18
Netherlands	529	1
Hungary	527	-1
Australia	519	-9
Canada	521	-7
New Zealand	501	-27
England	498	-30
United States	492	-36
Italy	491	-37
Country mean	**528**	

1999	Mean scale score	Difference from country mean
Korea	587	58
Japan	579	50
Belgium (Fl.)	558	29
Netherlands	540	11
Hungary	532	3
Canada	531	2
Australia	525	-4
Czech Republic	520	-9
United States	502	-27
England	496	-32
New Zealand	491	-38
Italy	485	-43
Country mean	**529**	

Science achievement

1995	Mean scale score	Difference from country mean
Czech Republic	555	25
Japan	554	24
Korea	546	16
Netherlands	541	11
Hungary	537	7
England	533	3
Belgium (Fl.)	533	3
Australia	527	-4
Canada	514	-16
United States	513	-17
New Zealand	511	-19
Italy	497	-33
Country mean	**530**	

1999	Mean scale score	Difference from country mean
Hungary	552	19
Japan	550	16
Korea	549	15
Netherlands	545	11
Australia	540	7
Czech Republic	539	6
England	538	5
Belgium (Fl.)	535	1
Canada	533	-1
United States	515	-19
New Zealand	510	-24
Italy	498	-36
Country mean	**534**	

Note: Data presented for 1995 have been re-scaled in order to allow comparison with 1999 data.
Countries are ranked in descending order of the mean scale score.
Source: IEA TIMSS (1995) and TIMSS-R (1999). Table F1.1.

F1

In mathematics, the picture is more varied. While some countries showed an improvement in mathematics scores, achievement scores in other countries decreased. Canada was the only country that showed a statistically significant increase in mean performance, with a 10-point improvement between 1995 and 1999. Conversely, in the Czech Republic the mean mathematics achievement decreased between 1995 to 1999 by a statistically significant 26 points, which is almost the equivalent of the average difference in performance between 7th and 8th-grade students (Chart F1.1).

In mathematics, the picture is more varied, with a roughly equal number of countries seeing increases and decreases in performance levels.

Individual countries' mathematics achievement scores remained mostly unchanged in relation to the country mean, with two exceptions. In 1995, students in the Czech Republic performed significantly above the country mean in mathematics, whereas in 1999 they performed at a level comparable to the country mean. Students in Canada, who showed a significant increase in their 1999 achievement, moved from significantly below the country mean in 1995 to a level comparable to the country mean in 1999. The Flemish Community of Belgium, Korea and Japan remained significantly above the country mean in both 1995 and 1999. In England, Italy, New Zealand and the United States, students' mean mathematics achievement was significantly lower than the country mean in both 1995 and 1999 (Chart F1.2).

In most countries, the relative standing in mathematics and science performance remained similar between 1995 and 1999.

While the relative standing of most countries has remained similar in mathematics and science, some countries show significantly higher performance in one discipline than in the other. For example, in England achievement scores are higher in science than in mathematics. In both 1995 and 1999, science achievement scores were slightly higher than the country mean, while mathematics scores were significantly below the country mean. The reverse is true for Belgium (Flemish Community), where mathematics performance is consistently higher than science performance. Such differences in student performance between subject areas may be attributable to the quality of teaching, differences in the emphasis placed on certain disciplines, or differences in the content areas of disciplines at various stages of the learning process.

In mathematics, countries grew further apart in their mean achievement...

Chart F1.2 illustrates the dispersion of country averages around the international mean. In mathematics, the difference in mean achievement between the highest and lowest-performing OECD countries increased from 90 points in 1995 to 102 points in 1999.

... while in science, the difference between the highest and lowest-scoring countries decreased slightly.

In science, the difference was less than half that in mathematics, the 54-point spread in 1999 decreasing slightly from its 58 points in 1995. Indicator F2 will examine related issues of variation in student achievement in greater depth.

DEFINITIONS AND METHODOLOGIES

The achievement scores are based on tests administered as part of the Third International Mathematics and Science Study (TIMSS) in 1995 and a repeat study (TIMSS-R) in 1999, both of which were undertaken by the International Association for the Evaluation of Educational Achievement (IEA).

The target population for this indicator is students in the higher of the two grades in which most 13-year-olds are enrolled, conventionally referred to as the 8th grade. In most countries, this means the 8th year of formal schooling.

The data are subject to sampling error, which sets a lower limit on the size of observed differences that can be considered statistically significant. Mean scores are therefore reported together with their standard errors. Chart F1.1 shows those countries where the difference in achievement scores between 1995 and 1999 is statistically significant.

In the majority of countries, testing for TIMSS-R was undertaken in 1999 but in some countries testing took place in 1998. For convenience, the reference date 1999 is given for TIMSS-R in this publication. Similarly, while in the majority of countries testing for TIMSS took place in 1995, in some countries the study was undertaken in 1994. For convenience, the reference date 1995 is given for TIMSS.

Chart F1.2 shows those countries where differences between the mean performance and the average across participating OECD countries are statistically significant. The statistical tests used to compare country means were conducted using an adjustment for multiple comparisons at the 95 per cent significance level.

The mean achievement scores for 1995 have been re-scaled to allow comparison with data from 1999, so that the figures shown may differ slightly from previous editions of *Education at a Glance*.

As the mean achievement scores were re-calculated to include only those 12 OECD countries which participated in both studies, the means presented in this chapter will differ from other published sources.

Table F1.1. **Trends in mean achievement scores in the 8th grade, by subject (1995 and 1999)**

	Mathematics achievement		
	1995	1999	1995-1999
	Mean scale score	Mean scale score	Difference in means
Australia	519 (3.8)	525 (4.8)	6 (6.1)
Belgium (Fl.)[1]	550 (5.9)	558 (3.3)	8 (6.8)
Canada	521 (2.2)	531 (2.5)	10 (3.2)
Czech Republic	546 (4.5)	520 (4.2)	−26 (6.1)
England[1]	498 (3.0)	496 (4.1)	−1 (5.2)
Hungary	527 (3.2)	532 (3.7)	5 (4.9)
Italy*	491 (3.4)	485 (4.8)	−6 (6.0)
Japan	581 (1.6)	579 (1.7)	−2 (2.2)
Korea	581 (2.0)	587 (2.0)	6 (2.8)
Netherlands[1]	529 (6.1)	540 (7.1)	11 (9.5)
New Zealand	501 (4.7)	491 (5.2)	−10 (7.1)
United States	492 (4.7)	502 (4.0)	9 (6.2)
Country mean	**528 (1.2)**	**529 (1.2)**	**1 (1.7)**

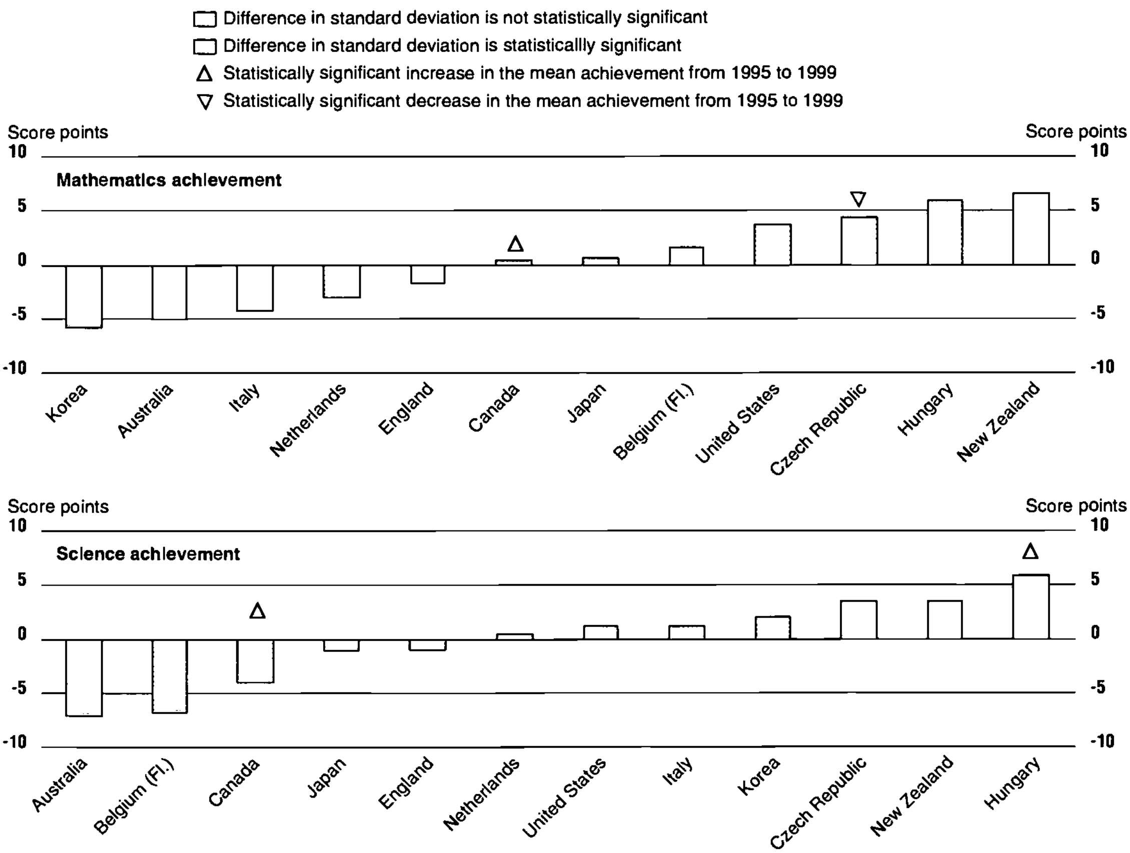
	Science achievement		
	1995	1999	1995-1999
	Mean scale score	Mean scale score	Difference in means
Australia	527 (4.0)	540 (4.4)	14 (6.0)
Belgium (Fl.)[1]	533 (6.4)	535 (3.1)	2 (7.1)
Canada	514 (2.6)	533 (2.1)	19 (3.3)
Czech Republic	555 (4.5)	539 (4.2)	−16 (6.1)
England[1]	533 (3.6)	538 (4.8)	5 (5.8)
Hungary	537 (3.1)	552 (3.7)	16 (4.9)
Italy*	497 (3.6)	498 (4.8)	1 (5.9)
Japan	554 (1.8)	550 (2.2)	−5 (3.0)
Korea	546 (2.0)	549 (2.6)	3 (3.4)
Netherlands[1]	541 (6.0)	545 (6.9)	3 (9.1)
New Zealand	511 (4.9)	510 (4.9)	−1 (6.9)
United States	513 (5.6)	515 (4.6)	2 (7.2)
Country mean	**530 (1.2)**	**534 (1.2)**	**4 (1.8)**

Note: Data presented for 1995 have been re-scaled in order to allow comparison with 1999 data.
1. Guidelines for sample participation rates were met only after replacement schools were included.
* See Annex 3 for notes.
( ) Standard errors appear in parentheses.
Source: IEA TIMSS (1995) and TIMSS-R (1999).

STUDENT DIFFERENCES IN MATHEMATICS AND SCIENCE ACHIEVEMENT IN THE 8TH GRADE (1995 and 1999)

- Countries differ widely not only in their average performance, but also in the distance between the highest and lowest-scoring students in each country.
- Korea has significantly reduced internal differences in mathematics achievement to a level that is now below the country mean while, at the same time, raising a very high level of mean achievement even higher. This shows that improvement in overall performance can be achieved without widening the gap between the highest and lowest-scoring students.
- In other countries, improvements in performance tend to be accompanied by an increase in internal differences.
- Data on the distribution of student performance reveal different explanations for changes in student variation. In Hungary, the improvement in the performance of the highest-scoring students accounts for the increase in the variation in mathematics scores. In New Zealand, variation increased because the lower-scoring students performed at a lower level in 1999 than in 1995. Conversely, in Korea, variation in mathematics achievement decreased because the performance of the low-achieving students improved.

Chart F2.1. **Difference in standard deviation in achievement scores in the 8th grade between 1995 and 1999, by subject**



Note: Data for 1995 have been re-scaled in order to allow comparison with 1999 data.
Countries are ranked in ascending order of the difference in standard deviations between 1995 and 1999 achievement scores.
Source: IEA TIMSS (1995) and TIMSS-R (1999). Table F2.1.

F2

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POLICY CONTEXT

This indicator presents information on how the variation in 8th-grade students' mathematics and science achievement has changed between 1995 and 1999.

Mean performance, as seen in Indicator F1, may be the most basic index for assessing student achievement across countries. However, because differences *within* countries are often greater than those *between* countries, it is also important to examine the distribution of achievement.

One of the major challenges faced by education systems is to encourage high performance while at the same time minimising internal disparities. Both parents and the public at large have become aware of the gravity of low achievement and the fact that school-leavers who lack basic skills face poor prospects of employment. A high proportion of students at the lower end of the scale may give rise to concern that a large number of tomorrow's taxpayers and voters will lack the basic skills required for the informed judgements which they are called upon to make. Conversely, the performance of a country's best students in mathematics and science may have implications for the part that country will play in the pool of tomorrow's mathematicians and scientists. Finally, wide variation in student performance, while affected by many factors, may indicate inequalities within the system in such areas as access to learning or opportunities to learn.

The indicator also attempts to identify where changes have occurred in the distribution.

Indicator F2 compares how differences within countries changed between 1995 and 1999. By looking at the distribution of student achievement in mathematics and science in both years, it also attempts to identify where changes occurred in the distribution.

EVIDENCE AND EXPLANATIONS

To illustrate changes in the variation in 8th-grade student performance in mathematics and science between 1995 and 1999, Chart F2.1 uses the standard deviations in mathematics and science achievement at the 8th-grade level. The standard deviation is a measure of how far students' scores are spread around the mean in each country. A smaller standard deviation indicates less internal variation, while a larger standard deviation indicates wider variation within a country.

Korea has significantly reduced internal differences in mathematics achievement...

Korea is an example of a country which has been able to raise a very high level of mean achievement in mathematics even higher while at the same time reducing the level of variation from above the country mean to below the country mean. Similarly Canada, which exhibits significant improvement in both subjects, has witnessed a decrease in internal variation in science and only a slight increase in variation in mathematics.

... while raising a very high level of mean achievement even higher.

These examples show that improvement in overall performance can be achieved without widening the gap between the highest and lowest-scoring students.

In some countries, improvements in performance were accompanied by an increase in internal differences...

However, in some countries improvement in overall performance was accompanied by an increase in internal differences. For example, Hungary showed a significant increase in student achievement in science, yet at the same time witnessed the largest increase in internal variation between 1995 and 1999 among participating countries.

Finally, the Czech Republic and New Zealand show decreases in mean mathematics achievement while variation in achievement increased, although in New Zealand this decrease is not statistically significant.

... in other countries, mean achievement decreased while internal differences increased.

It is also important to view these findings in the light of the relative magnitude of each country's variation (see Tables F2.1 and F2.2). In the case of the Czech Republic, although variation in mathematics scores increased between 1995 and 1999, it remains at a very low level in comparison with other OECD countries.

Countries differ widely not only in their average performance, but also in the difference between the highest and lowest-scoring students in each country.

In general, countries with small internal differences in a subject in 1995 also exhibited small internal differences in comparison with other countries in 1999. In addition to the Czech Republic, Belgium (Flemish Community), Canada and the Netherlands had the smallest internal differences in mathematics in both 1995 and 1999. This was also true for Belgium (Flemish Community), Japan and the Netherlands in science. Similarly, countries with relatively large internal variations in 1995, such as New Zealand and the United States, also tended to exhibit relatively large variations in 1999.

In order to understand the nature of changes in student variation, policy-makers are also interested in investigating where change primarily occurs within the distribution. For instance, have the upper quarter of students improved their performance while the lower quarter remained the same? Or, has the performance of the lower quarter decreased at a greater rate than the top quarter? Chart F2.2 and Table F2.2 show how students at the 5th, 25th, 75th and 95th percentiles in each country performed in 1995 and 1999. Data on the distribution of student performance reveal different explanations for changes in student variation in countries that exhibited similar changes in standard deviation.

Data on the distribution of student performance reveal different explanations for changes in student variation in countries that exhibited similar changes in standard deviation.

For example, Hungary and New Zealand saw relatively large increases in the standard deviation of mathematics achievement. In Hungary, however, the highest-scoring students (*i.e.*, those at the 95th percentile) in 1999 significantly outperformed the highest-scoring students in 1995, while the lowest-scoring students (*i.e.*, those at the 5th percentile) exhibited no significant change from 1995. The improvement in the performance of the highest-scoring students, in addition to a relatively small (and statistically insignificant) drop in scores among the lowest-scoring students, accounts for the increase in variation among Hungarian students.

In Hungary, the improvement in the performance of the highest-scoring students accounts for the increase in the variation in mathematics scores.

By contrast, variation increased in New Zealand because the lowest-scoring students performed at a lower level in 1999 than in 1995 – in this country, scores decreased significantly at the 5th and 25th percentiles, while no significant changes were observed at the other levels.

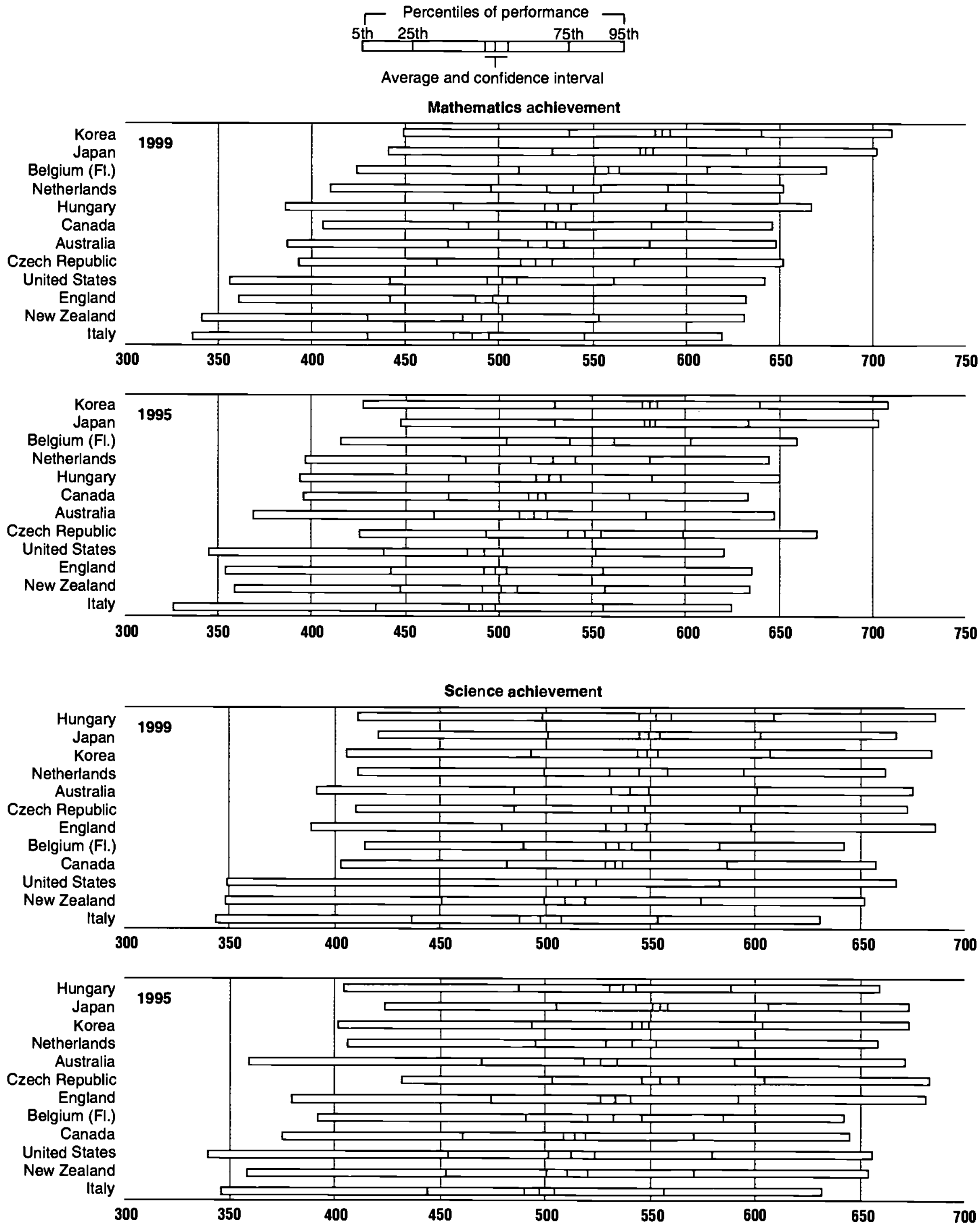
In New Zealand, the lowest-scoring students performed at a lower level in 1999 than in 1995...

F2

In Korea, the lowest-scoring students in mathematics scored 20 points more in 1999 than in 1995, while changes at the 75th and 95th percentiles were small and not statistically significant. This suggests that the decrease in student variation in Korea may be explained by the improvement in the performance of low-scoring students. Observation of percentile scores provides some interesting insights into the nature of changes in the variation within countries. Further analysis is needed to establish relationships between student scores at different levels of performance, and internal differences within countries.

... while in Korea, variation in mathematics achievement decreased because the performance of students with low achievement scores improved.

Chart F2.2. **Distribution of 8th-grade scores, by subject (1999 and 1995)**



Note: Data for 1995 have been re-scaled in order to allow comparison with 1999 data.
Data are ranked in descending order of mean achievement scores for 1999.
Source: IEA TIMSS (1995) and TIMSS-R (1999). Table F2.2.

DEFINITIONS AND METHODOLOGIES

The target population studied in this indicator is students in the higher grade of the two grade levels in which most 13-year-olds are enrolled, conventionally referred to as the 8th grade. In most countries, this means the eighth year of formal schooling.

The achievement scores are based on tests administered as part of the Third International Mathematics and Science Study (TIMSS) in 1995 and its repeat (TIMSS-R) in 1999, both of which undertaken by the International Association for the Evaluation of Educational Achievement (IEA).

Table F2.1 shows the mean and standard deviation of achievement scores for 8th-grade students in 1995 and 1999. The standard deviation is calculated as the square root of the average of the squared deviations of each student's mathematics score from the country mean. It is defined in such a way that in a normal distribution, about two-thirds of students score within one standard deviation of the mean and all but about 5 per cent fall within two standard deviations. Chart F2.1 shows the countries where the difference between the standard deviation of mathematics and science achievement between 1995 and 1999 is statistically significant. F tests were used to compare standard deviations at the 95 per cent confidence level.

Table F2.2 shows the achievement scores of the students at the 5th, 25th, 75th and 95th percentiles of countries' distributions in 1995 and 1999. The 5th percentile, for example, refers to the achievement score below which 5 per cent of the population in a country lies. The tables also show the countries where the mean at each percentile in 1999 is statistically different from the mean at the same percentile in 1995. The statistical tests used to compare means were conducted using an adjustment for multiple comparisons at the 5 per cent significance level. Chart F2.2 presents these data graphically.

The mean achievement scores and percentiles for 1995 have been re-scaled to allow comparison with data from 1999, so that figures shown may differ slightly from previous editions of *Education at a Glance*.

F2

Table F2.1. **Change in standard deviation of 8th-grade scores, by subject (1995 and 1999)**

	Mathematics achievement						
	Mean		Standard deviation		Difference in standard deviation	Rank of standard deviation	
	1999	1995	1999	1995	1995-1999	1999	1995
Australia	525	519	80	85	−5	7	9
Belgium (Fl.)[1]	558	550	77	75	2	3	2
Canada	531	521	73	72	n	1	1
Czech Republic	520	546	79	75	4	4	3
England[1]	496	498	83	85	−2	8	10
Hungary	532	527	85	79	6	9	6
Italy*	485	491	86	91	−4	10	12
Japan	579	581	80	79	1	6	5
Korea	587	581	79	85	−6	5	11
Netherlands[1]	540	529	73	76	−3	2	4
New Zealand	491	501	89	82	7	12	7
United States	502	492	88	84	4	11	8
	Science achievement						
	Mean		Standard deviation		Difference in standard deviation	Rank of standard deviation	
	1999	1995	1999	1995	1995-1999	1999	1995
Australia	540	527	87	94	−7	8	11
Belgium (Fl.)[1]	535	533	69	76	−7	1	2
Canada	533	514	78	82	−4	4	6
Czech Republic	539	555	80	77	3	5	3
England[1]	538	533	91	92	−1	10	10
Hungary	552	537	84	79	6	6	5
Italy*	498	497	88	86	1	9	8
Japan	550	554	76	77	−1	2	4
Korea	549	546	85	83	2	7	7
Netherlands[1]	545	541	77	76	n	3	1
New Zealand	510	511	93	90	3	11	9
United States	515	513	97	96	1	12	12

Note: Data presented for 1995 have been re-scaled in order to allow comparison with 1999 data.
1. Guidelines for sample participation rates were met only after replacement schools were included.
* See Annex 3 for notes.
Source: IEA TIMSS (1995) and TIMSS-R (1999). See Annex 3 for standard errors.

Table F2.2. **Distribution of 8th-grade achievement scores, by subject (1995 and 1999)**

Mathematics achievement

		1999	1995		1999	1995		1999	1995		1999	1995		1999	1995
		Mean			5th percentile			25th percentile			75th percentile			95th percentile	
Australia		525	519	▲	387	368	▲	472	465		581	578		648	647
Belgium (Fl.)[1]		558	550		423	415		511	504	▲	611	602	▲	675	659
Canada	▲	531	521	▲	406	396	▲	484	473	▲	581	570	▲	646	633
Czech Republic	▼	520	546	▼	392	426	▼	467	493	▼	573	599		653	670
England[1]		496	498		360	354		442	443	▼	551	556		632	635
Hungary•		532	527		386	393		476	474	▲	590	582	▲	667	650
Italy•		485	491		336	326		430	434	▼	546	556		619	625
Japan		579	581		441	447		529	530		633	633		702	703
Korea		587	581	▲	448	428	▲	538	530		640	639		710	708
Netherlands[1]		540	529		410	396	▲	495	482	▲	590	581		653	644
New Zealand		491	501	▼	341	359	▼	430	447		554	557		632	634
United States		502	492	▲	356	345		442	438	▲	562	552	▲	642	621

Science achievement

		1999	1995		1999	1995		1999	1995		1999	1995		1999	1995
		Mean			5th percentile			25th percentile			75th percentile			95th percentile	
Australia		540	527	▲	391	360	▲	485	470	▲	601	590		675	671
Belgium (Fl.)[1]		535	533	▲	415	392		490	491		583	585		642	642
Canada	▲	533	514	▲	403	376	▲	482	461	▲	586	571	▲	657	646
Czech Republic		539	555	▼	410	432	▼	485	504	▼	593	604	▼	672	683
England[1]		538	533		388	379		479	474		598	592		686	681
Hungary•	▲	552	537		411	405	▲	499	487	▲	609	588	▲	686	659
Italy•		498	497		344	346	▼	436	444		554	556		631	632
Japan		550	554		421	424		501	505		602	607		667	673
Korea		549	546		406	402		493	494		607	604		684	673
Netherlands[1]		545	541		411	406		500	495		595	592		662	658
New Zealand		510	511		348	358		451	453		574	571		652	654
United States		515	513		349	340		450	454		583	580	▲	667	655

▼ Statistically significant decrease from 1995 to 1999.
▲ Statistically significant increase from 1995 to 1999.
Note: Data presented for 1995 have been re-scaled in order to allow comparison with 1999 data.
1. Guidelines for sample participation rates were met only after replacement schools were included.
• See Annex 3 for notes.
Source: IEA TIMSS (1995) and TIMSS-R (1999). See Annex 3 for standard errors.

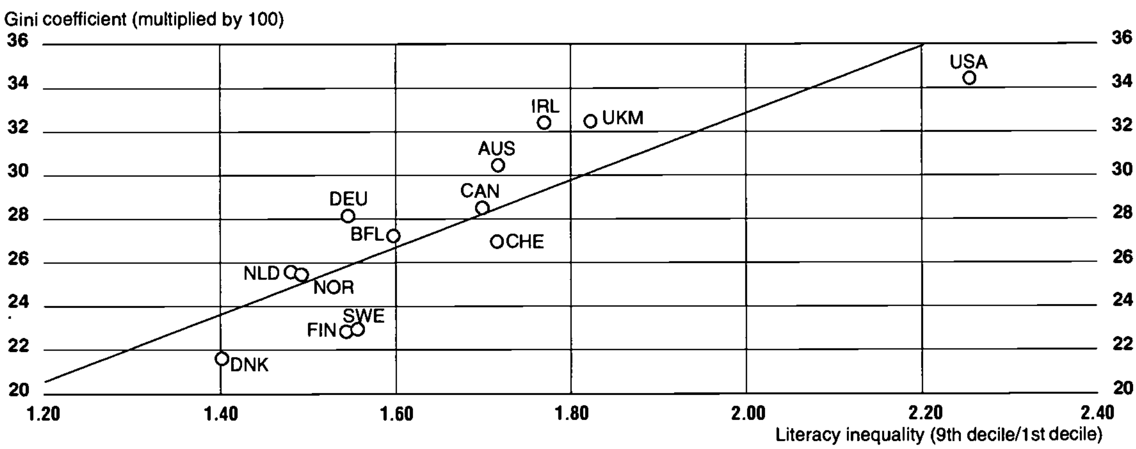
F2

INCOME INEQUALITY AND LITERACY INEQUALITY

- Higher variation in prose literacy scores is closely related to income inequality, but the causal interpretation of this relationship is far from straightforward.
- Five of the six best-performing countries show that it is possible for adult populations to achieve both high average prose literacy scores and small disparities.

Chart F3.1. **Income inequality and literacy inequality**

Relationship between income inequality (Gini coefficient) and inequality in the distribution of literacy (9th decile/1st decile) within countries, prose scale



Source: International Adult Literacy Survey, 1994-1998; OECD (1999), *Trends in Income Distribution and Poverty in the OECD Area.* Table F3.1.

F3

POLICY CONTEXT

Investment in human capital is one of the recognised means of achieving high rates of employment, economic growth and social progress. What have been the outcomes of these efforts in terms of the levels and distribution of human capital in the adult population in different countries, and what is the association between the distribution of human capital and the distribution of important economic variables, such as individual income?

Indicator F2 showed that countries differ widely not only in the average performance of 13-year-old students, but also with regard to the knowledge gap between the highest and lowest-scoring groups in that age cohort. Indicator F3 takes this point further by estimating the distribution of human capital in the adult population and relating this distribution to variation in individual income.

EVIDENCE AND EXPLANATIONS

One way of estimating human capital is to test adults for certain core abilities, such as literacy. Respondents to the International Adult Literacy Survey, which was conducted by Statistics Canada and the OECD between 1994 and 1998, were asked to carry out various tasks that might be encountered in everyday life. Three scales of literacy were devised and tested: "prose literacy" (the knowledge and skills required to understand and use information from texts, such as editorials, news stories, brochures and instruction manuals); "document literacy" (the knowledge and skills required to locate and use information contained in various formats such as job applications, payroll forms, transportation timetables, maps, tables and graphics); and "quantitative literacy" (the knowledge and skills required to apply arithmetical operations to numbers embedded in printed materials, such as balancing a cheque-book, calculating a tip, completing an order form or determining the amount of interest on a loan from an advertisement).

Six of the seven best-performing countries show that it is possible for adult populations to achieve both high average prose literacy scores and small disparities.

Table F3.1 presents the average levels of prose literacy in the participating countries in addition to the 10th and 90th percentiles of the distribution of prose literacy scores. As in the case of student achievement in mathematics and science (Indicator F2), the table shows that it is possible for countries to achieve both high average levels in prose literacy and a narrow distribution of literacy scores. For example, Denmark, Finland, Germany, the Netherlands, Norway and Sweden, six of the seven best-performing countries, also show very low levels of variation in their prose literacy scores (as measured by the ratio of the highest 10 per cent of prose literacy scores to the lowest 10 per cent). Canada, on the other hand, shows high mean prose scores and a comparatively wide variation. The United States shows a mean score around the country mean with the highest ratio of the highest 10 per cent of prose literacy scores to the lowest 10 per cent.

Higher variation in prose literacy scores is closely related to income inequality…

How is the range of variation in prose literacy scores related to the distribution of individual income, as one important indicator of the returns to skills? In order to address this question, the horizontal axis in Chart F3.1 shows the ratio between the top 10 per cent of prose literacy scores and the bottom 10 per cent. The closer the index is to 1, the more equality in prose literacy scores within the population. The vertical axis of Chart F3.1 presents the Gini coefficient of income inequality, which has been multiplied by 100. The closer the coefficient is to 0, the more equal the distribution of income across the population, whereas the closer it is to 1, the higher the income inequality.

Higher variation in prose literacy scores, in the 13 OECD countries for which data are available on both dimensions, is closely associated with greater inequality in distribution of income. The Nordic countries and the Netherlands show both low variation in literacy skills and low levels of inequality. Conversely, the United States stands out with both wide variation in literacy skills and a high level of income inequality.

... but the causal interpretation of this relationship is far from straightforward.

Income inequality, which increased in a number of OECD countries between the mid-1980s and the mid-1990s, is related to many factors. Increased income differentials between households according to type of employment (part-time, temporary, etc.) have led to a simultaneous increase in the proportions of both work-rich and work-poor households. There are also indirect effects, such as the influence of distribution of income on education, and the possible impact of political and economic mechanisms on economic growth.

Earnings disparities can be significantly influenced by wage determination mechanisms.

Generally, income disparities reflect earnings disparities, which may in turn be significantly influenced by wage determination mechanisms, such as minimum wages and collective bargaining arrangements. The extent of social transfers to households can reduce the impact of market-income disparities.

The distribution of human capital can be a factor in income inequality...

While the information in Chart F3.1 should not be interpreted as evidence of a direct causal relationship between the distribution of human capital in a population and income inequality in that population, literacy undoubtedly has a role to play.

... and conversely, income inequality can cause unequal investment in the education of the next generation.

Conversely, higher income inequality can cause unequal investment in education, which will affect the literacy skills and inequality of access to education of the next generation.

Other variables may produce inequalities in both literacy and income simultaneously. Disparities between countries in income and literacy levels may also reflect general societal attitudes towards, and tolerance of, certain levels of inequality. It is clear that these relationships, which are important for social cohesion, deserve further research and analysis.

DEFINITIONS AND METHODOLOGIES

The literacy scales are based on the International Adult Literacy Survey conducted by the OECD and Statistics Canada in 1994 and 1998.

The International Adult Literacy Survey (IALS) was designed to measure adult literacy skills through the assessment of proficiency levels, using test materials derived from specific contexts within countries.

Inequality in the distribution of literacy in Chart F3.1 is expressed as the ratio between the 90th percentile of prose literacy scores (D9) and the 10th percentile (D1). The closer the index is to 1, the greater the equality in literacy scores within the population.

Income inequality is measured using the Gini coefficient. The Gini coefficient is a measure of income inequality that reflects the distribution of income in a population. The closer the coefficient is to 0, the more equal the distribution of income across the population, whereas the closer the coefficient is to 1, the greater the inequality. The Gini coefficient has been multiplied by 100 in Chart F3.1 and Table F3.1.

Table F3.1. **Inequality in the distribution of literacy and income inequality**

Distribution of prose literacy skills for the population aged 16 to 65 years of age and the Gini coefficient of income inequality

	Date of survey collection	Distribution of literacy (prose scale)[1]			Distribution of literacy	Gini coefficient of income inequality (multiplied by 100)
		Mean	10th percentile	90th percentile	(90th percentile/ 10th percentile)	
Australia	1996	274	201	346	1.72	30.5
Belgium (Fl.)[2]	1996	272	215	344	1.60	27.2
Canada	1994	279	200	341	1.70	28.5
Denmark	1998	275	229	320	1.40	21.7
Finland	1998	289	227	348	1.54	22.8
Germany	1994	276	216	334	1.55	28.2
Ireland	1995	266	188	333	1.77	32.4
Netherlands	1994	283	228	340	1.49	25.5
Norway	1997/1998	289	231	341	1.48	25.6
Sweden	1994/1995	301	234	364	1.55	23.0
Switzerland[3]	1998	264	191	327	1.72	26.9
United Kingdom	1996	267	186	339	1.82	32.4
United States	1994	274	153	345	2.25	34.4

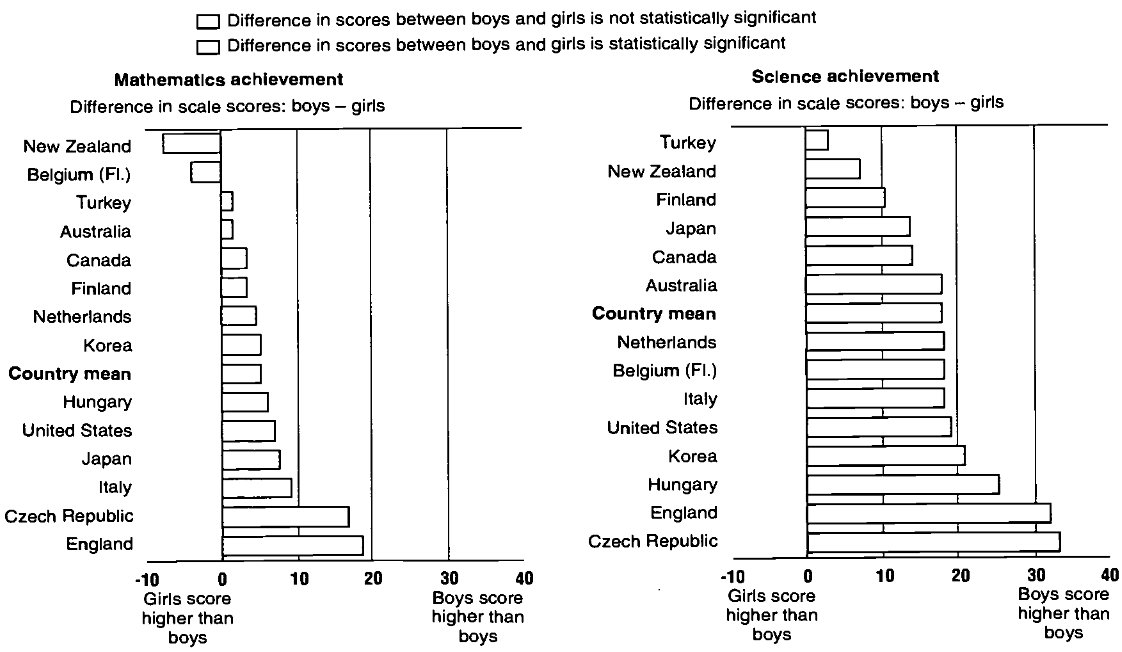
1. Values for the distribution of literacy scores are provided only for those countries where data are available on the Gini coefficient of income inequality.
2. Gini coefficient refers to Belgium.
3. Combined estimate for whole country population, 1994 and 1998.

Source: International Adult Literacy Survey (IALS), 1994-1998; OECD, *Trends in Income Distribution in OECD Area*, 1999.

GENDER DIFFERENCES IN MATHEMATICS AND SCIENCE ACHIEVEMENT IN THE 8TH GRADE (1999)

- Gender differences in mathematics achievement in the 8th grade are small to moderate in most of the participating OECD countries.
- In science, gender differences in achievement in the 8th grade are larger and more often statistically significant than in mathematics, with boys scoring on average the equivalent of half a school year higher than girls.
- Girls in Korea score lower than boys in mathematics, but they still perform better than boys and girls in all other countries.
- Low average performance and large gender differences are often found together: four out of the five countries which display the largest gender differences perform well below the country mean.
- Japan, Korea and the Netherlands managed to eliminate statistically significant gender differences in mathematics between 1995 and 1999.

Chart F4.1. **Differences in mean achievement scores between gender, by subject (1999)**



Countries are ranked in ascending order of the difference in average scale scores between boys and girls.
Source: IEA TIMSS-R (1999). Table F4.1.

F4

POLICY CONTEXT

This indicator compares the mathematics and science achievement of 8th-grade boys and girls.

All countries place a high level of importance on reducing educational disparities between men and women. Education has a major influence on labour market participation, occupational mobility and quality of life. Past studies have suggested that relatively small gender differences in mathematics and science achievement in the early grades (favouring boys in nearly all cases) become more pronounced and pervasive across countries at higher grade levels. Gender differences in mathematics and science achievement at age 13 can also affect pathways in further education and training as well as career opportunities later in life.

Reducing educational differences between boys and girls, especially in the key subject areas of mathematics and science, is therefore a major goal in many OECD countries, and it is important that policy-makers should be aware of any consistent differences in performance that may hinder the chances of a particular group of students.

Indicator F4 provides information on the mathematics and science achievement of boys and girls in the 8th grade in OECD countries.

EVIDENCE AND EXPLANATIONS

Gender differences in mathematics achievement in the 8th grade are small to moderate in most of the participating OECD countries.

Gender differences in mathematics achievement in the 8th grade are small to moderate in most of the participating OECD countries (Chart F4.1). Overall, boys outperformed girls by an average of 5 points, a small but statistically significant difference. At the individual country level, although boys scored higher than girls in all but two countries (the Flemish Community of Belgium and New Zealand), generally the differences in achievement are not statistically significant. In the Czech Republic, however, the achievement scores for boys exceeded those for girls by a statistically significant 17 points, half of the average difference in performance between students in the 7th and the 8th grades, as measured in 1995 (33 points).

In science, gender differences in achievement in the 8th grade are larger than in mathematics...

In science, gender differences in achievement in the 8th grade are larger and more often statistically significant than in mathematics (Chart F4.1). In all 14 of the participating OECD countries, boys scored higher than girls, and the differences are statistically significant in all but five countries (Australia, the Flemish Community of Belgium, Finland, New Zealand and Turkey).

... with boys scoring, on average, the equivalent of roughly half a school year higher than girls.

On average, boys in OECD countries scored 18 points higher than girls, almost half the average difference in performance between students in the 7th and 8th grades, as measured in 1995 (39 points).

Across both subject areas, five countries (Australia, the Flemish Community of Belgium, Finland, New Zealand and Turkey) showed no significant gender difference in either subject, while the Czech Republic exhibited significant differences favouring boys in both subjects.

Girls in Korea scored lower than boys in Korea in mathematics, but they still performed better than boys in all other countries...

In some countries which display relatively large gender differences in achievement favouring boys, girls nevertheless achieved high scores, especially in mathematics. On average, girls in Korea outperformed all other students in the study in mathematics, except boys in Korea. Girls in Belgium (Flemish Community) and Japan also performed at a high level compared to other students. In science, the strong performance by girls in some countries relative to boys was less pronounced, with girls in Japan (who had the highest scores of girls in participating OECD countries) outscoring boys in six countries.

Similarly, some countries that exhibit relatively large gender differences in achievement also had low overall performance. In fact, four out of the five countries with the largest gender differences had achievement scores well below the country mean. Turkey had the smallest difference between the achievement of boys and that of girls in both mathematics and science, but it also had the lowest mean achievement by both boys and girls.

... while in other countries gender differences were high and the average performance was low.

When the results of gender analysis from TIMSS-R were compared with those from TIMSS, three countries that displayed significant gender differences in mathematics favouring boys in 1995, showed no such differences in 1999: Japan, Korea and the Netherlands. In science, while the gender difference favouring boys was not significant in New Zealand in 1999, it was significant in 1995.

In Japan, Korea and the Netherlands, gender differences in mathematics declined between 1995 and 1999...

Conversely, the 1995 study results for England did not show significant gender differences in science, while results in 1999 indicated statistically significant differences favouring boys. Although the significance of gender differences changed between 1995 and 1999 in several countries, in mathematics these changes can be considered statistically significant only in Korea.

... while in other countries, gender differences have grown.

DEFINITIONS AND METHODOLOGIES

The target population studied for this indicator is students in the higher of the two grades in which most 13-year-olds are enrolled, conventionally referred to as the 8th grade. In most countries, this means the eighth year of formal schooling.

The achievement scores are based on tests administered as part of the Third International Mathematics and Science Study (TIMSS) in 1995 and its repeat (TIMSS-R) in 1999, both of which were undertaken by the International Association for the Evaluation of Educational Achievement (IEA).

The data are subject to sampling error, which sets a lower limit on the size of observed differences that can be considered statistically significant. Mean scores are therefore reported together with their standard errors. Chart F4.1 shows countries where differences in achievement scores between boys and girls are statistically significant. The statistical tests used to compare country means were conducted using an adjustment for multiple comparisons at the 95 per cent significance level.

The statistical tests used to compare the means of boys' and girls' achievement scores were adjusted for multiple comparisons. The results above differ slightly from the international publications on TIMSS-R because the comparison group in this case was restricted to the 14 OECD countries participating in both studies.

Table F4.1. **Differences in mean achievement scores in the 8th grade, by gender and subject (1999)**

	Mathematics achievement					
	Girls		Boys		Difference in means	Standard error
	Mean	Standard error	Mean	Standard error		
Australia	524	(5.7)	526	(5.7)	2	(6.0)
Belgium (Fl.)[1]	560	(7.2)	556	(8.3)	–4	(14.2)
Canada	529	(2.5)	533	(3.2)	3	(2.9)
Czech Republic[2]	512	(4.0)	528	(5.8)	17	(5.0)
England[1]	487	(5.4)	505	(5.0)	19	(6.5)
Finland	519	(3.0)	522	(3.5)	3	(3.6)
Hungary	529	(4.0)	535	(4.3)	6	(3.7)
Italy	475	(4.5)	484	(4.3)	9	(4.2)
Japan	575	(2.4)	582	(2.3)	8	(3.3)
Korea	585	(3.1)	590	(2.2)	5	(3.7)
Netherlands[1]	538	(7.6)	542	(7.0)	5	(3.0)
New Zealand	495	(5.5)	487	(7.6)	–7	(8.3)
Turkey	428	(4.7)	429	(4.4)	2	(2.8)
United States	498	(3.9)	505	(4.8)	7	(3.4)
Country mean[2]	**518**	**(1.3)**	**523**	**(1.4)**	**5**	**(1.5)**
	Science achievement					
	Girls		Boys		Difference in means	Standard error
	Mean	Standard error	Mean	Standard error		
Australia	532	(5.1)	549	(6.0)	18	(6.8)
Belgium (Fl.)[1]	526	(4.6)	544	(7.2)	18	(10.3)
Canada[2]	526	(3.2)	540	(2.4)	14	(3.9)
Czech Republic[2]	523	(4.8)	557	(4.9)	33	(4.8)
England[1, 2]	522	(6.2)	554	(5.3)	32	(6.6)
Finland	530	(4.0)	540	(4.5)	10	(5.0)
Hungary[2]	540	(4.0)	565	(4.5)	25	(4.2)
Italy[2]	484	(4.1)	503	(5.6)	18	(5.8)
Japan[2]	543	(2.8)	556	(3.6)	14	(4.6)
Korea[2]	538	(4.0)	559	(3.2)	21	(5.1)
Netherlands[1, 2]	536	(7.1)	554	(7.3)	18	(4.1)
New Zealand	506	(5.4)	513	(7.0)	7	(7.8)
Turkey	431	(4.8)	434	(4.3)	3	(2.9)
United States[2]	505	(4.6)	524	(5.5)	19	(4.1)
Country mean[2]	**517**	**(1.3)**	**535**	**(1.4)**	**18**	**(1.5)**

1. Guidelines for sample participation rates were met only after replacement schools were included.
2. Difference in means is statistically significant.

Source: IEA TIMSS-R (1999).

Annex 1

TYPICAL GRADUATION AGES

The typical graduation age is the age at the end of the last school/academic year of the corresponding level and programme when the degree is obtained. The typical age is based on the assumption of full-time attendance in the regular education system without grade repetition. (Note that at some levels of education the term "graduation age" may not translate literally and is used here purely as a convention.)

Table X1.1*a*. **Typical graduation ages at upper secondary level**

	Programme orientation		Educational/Labour market destination			
	General programmes	Pre-vocational or vocational programmes	ISCED 3A programmes	ISCED 3B programmes	ISCED 3C short programmes[1]	ISCED 3C long programmes[1]
OECD countries						
Australia	m	m	17	m	m	m
Austria	18	18	18	18	15	a
Belgium	18-19	18-19	18-19	a	18-19	18-19
Canada	m	m	17-18	a	m	m
Czech Republic	19	18	19	19	18	19
Denmark	19-20	19-20	19-20	a	a	19-20
Finland	19	19	19	a	a	a
France	18-19	17-20	18-19	19-20	17-20	18-21
Germany	19	19	19	19	a	a
Greece	18	17-18	18	a	a	17-18
Hungary	18-20	16-17	18-20	20-22	16-17	18
Iceland	20	19-20	20	19	18	20
Ireland	18	18	18	a	a	18
Italy	19	19	19	19	17	a
Japan	18	16-18	18	18	16	16
Korea	17-18	17-18	17-18	a	a	17-18
Luxembourg	19	17-19	17-19	19	n	17-19
Mexico	18	19	18	a	19	19
Netherlands	17-18	18-20	17-18	a	a	18-20
New Zealand	m	m	18	17	17	17
Norway	18-19	18-19	18-19	a	18-19	16-18
Poland	19	20	19-20	a	18	a
Slovak Republic	18	16-18	18	a	17	16
Spain	17	15-17	17	a	15-17	17
Sweden	19	19	19	a	a	19
Switzerland	m	m	18-20	18-20	17-19	17-19
Turkey	16	16	16	16	a	16
United States	18	a	18	a	a	a
WEI participants						
Argentina	15-18	15-18	15-18	a	a	a
Brazil	17	17	17	17	a	17
Chile	18	18	18	18	a	a
China	18	18	18	18	a	18
Egypt[2]	17	17	17	17	a	17
India	18	18	18	a	a	a
Indonesia	18	18-19	18	18-19	a	a
Jordan[2]	18	18	18	a	a	18
Malaysia[3]	17-19	17-19	19	a	a	17
Paraguay[2]	18	18	18	a	a	18
Peru	16	16	16	16	a	a
Philippines[2]	16	a	16	a	a	a
Russian Federation[2]	17	17-18	17	n	n	n
Sri Lanka[2]	16-18	16	16-18	16	a	a
Thailand	16	16	16	16	a	a
Tunisia[2]	19	16-19	19	16-17	m	a
Uruguay[2]	18	18	18	18	a	a
Zimbabwe[2]	19	17	19	a	a	17

1. Duration categories for ISCED 3C – Short: at least one year shorter than ISCED 3A/3B programmes; Long: of similar duration to ISCED 3A or 3B programmes.
2. OECD estimate.
3. OECD estimate for general and pre-vocational/vocational programmes.
Source: OECD.

Table X1.1b. **Typical graduation ages at post-secondary non-tertiary level**

	Programme orientation		Educational/Labour market destination		
	General programmes	Pre-vocational or vocational programmes	ISCED 4A programmes	ISCED 4B programmes	ISCED 4C programmes
OECD countries					
Austria	a	19	19	19	20
Belgium	19-20	19-20	19-20	a	19-20
Canada	19	21	m	m	20
Czech Republic	20	20	20	a	20
Denmark	21-22	21-22	21-22	a	21-22
Finland	a	25-29	a	a	25-29
France	18-21	19-21	18-21	a	19-21
Germany	22	22	22	22	a
Greece	a	19-20	a	a	19-20
Hungary	20-22	19-22	20-22	a	19-22
Iceland	a	21	a	a	21
Ireland	a	19	a	a	19
Italy	a	20	a	a	20
Japan	19	19	19	19	19
Korea	a	a	a	a	a
Luxembourg	a	20-25	a	a	20-25
Mexico	a	a	a	a	a
Netherlands	a	18-20	a	18-20	18-20
New Zealand	m	m	18	18	18
Norway	a	20-25	a	a	20-25
Poland	a	21	a	21	a
Slovak Republic	a	20-21	21-21	a	a
Spain	a	18	18	18	a
Sweden	m	19-20	19-20	m	19-20
Switzerland	m	m	19-21	21-23	a
Turkey	a	a	a	a	a
United States	a	20	a	a	20
WEI participants					
Argentina	a	a	15-18	a	a
Brazil	a	a	a	a	a
Chile	a	a	a	a	a
China	a	20	a	20	20
Egypt[1]	a	19	a	a	19
India	a	a	a	a	a
Indonesia	a	a	a	a	a
Jordan[1]	a	a	a	a	a
Malaysia[1]	18	18	a	a	18
Paraguay	a	a	a	a	a
Peru	a	m	a	a	m
Philippines[1]	17-19	17-19	18-19	18-19	17
Russian Federation	a	18-19	a	a	18-19
Sri Lanka[1]	a	a	a	a	a
Thailand[1]	a	19	a	a	19
Tunisia	a	a	a	a	a
Uruguay	a	a	a	a	a
Zimbabwe	a	19	a	a	19

1. OECD estimate.
Source: OECD.

Table X1.1c. **Typical graduation ages at tertiary level**

	Tertiary-type B (ISCED 5B)[1]					Tertiary-type A (ISCED 5A)[1]					Advanced research programmes (ISCED 6)
	1st qualification			2nd qualification		1st degree			2nd degree		
	Medium duration	Long duration	Very long duration	Long duration	Very long duration	Medium duration	Long duration	Very long duration	Long duration	Very long duration	
OECD countries											
Australia	m	m	m	m	m	20	a	a	22-23	a	25-29
Austria	20	21	a	23	24	22	23	a	a	25	25
Belgium	a	21-23	a	a	a	22-25	22-25	24-26	22-27	24-26	25-29
Canada	20	21	a	m	m	22	23	25	26	m	29
Czech Republic	21	22	a	25	a	22	24	a	24	a	27
Denmark	21-22	22-24	a	22-24	25-29	22-24	25-26	a	24-26	27-30	30
Finland	21-22	a	a	a	a	24	26	a	a	32	29
France	20-21	a	a	a	a	21-22	23-24	25	23-24	a	25-26
Germany	21	22	a	a	a	25	26	a	a	a	28
Hungary	m	m	m	m	m	21-25	23-26	a	30	30	30
Iceland	22	24	a	a	a	23	25	a	25	a	29
Ireland	20	21	a	21	a	22	23	24	24	25	27
Italy	a	22-23	a	a	a	22	23-25	a	23-25	25-27	27-29
Japan	20	21	23	a	a	22	23	a	24	a	22
Korea	20	21-22	a	24	a	21-22	22-23	23-24	23	a	26
Luxembourg	22	22	a	a	a	a	a	a	a	a	a
Mexico	m	a	a	a	a	m	a	a	m	m	m
Netherlands	19-20	19-20	a	a	a	22-23	22-24	25-26	23-25	23-25	25
New Zealand	20	20	a	21	a	21-22	22-24	23-24	22-23	a	28
Norway	20-22	a	a	a	a	20-22	22-25	25-26	22-25	25-26	29
Poland	21	a	a	a	a	24	25	a	25	a	m
Portugal	a	21-22	22-23	a	a	20-24	20-24	a	23-24	26-27	27-29
Slovak Republic	20	21	a	a	a	21-22	23-24	a	a	a	27
Spain	19	a	a	a	a	20	22	a	m	a	25-27
Sweden	22-23	23	a	a	a	23-25	25-26	a	25-30	a	27-29
Switzerland	m	m	m	m	24-26	23-26	23-26	28	23-26	24-26	29
Turkey	20-21	m	a	a	a	22-24	m	m	25-26	a	28-29
United Kingdom	20	21	23	21	23	21	23	24	22-23	24	24
United States	20	a	a	a	a	21	a	a	23	25	28
WEI participants											
Argentina	20-21	20-21	a	a	a	23-24	23-24	23-24	23-24	23-24	23-29
Brazil	a	22	23	m	m	22 or 23	23	23	23	23	29
Chile	22	a	a	a	a	22	23	24	a	23	25
China	a	a	a	a	a	22	23	a	a	24-25	28
Egypt[2]	a	a	a	a	a	21-23	21-23	a	a	23-25	25+
India[2]	20-22	22-23	a	a	a	20-21	a	a	22-23	23-24	m
Indonesia	22	22	a	a	a	22-23	24	24	a	24-26	27-29
Jordan[2]	a	a	a	a	a	24+	22-24	a	23-25	24+	27+
Malaysia	20-22	a	a	a	a	24	27	a	24-25	a	29
Paraguay[2]	22	a	a	a	a	22-24	22-24	a	a	a	24-28
Peru	21	22	a	a	a	a	21-22	24	a	a	27
Philippines	a	a	a	a	a	19	20	21	23	24	25
Russian Federation[2]	20-22	a	a	a	a	22	a	a	a	24	25-30
Sri Lanka[2]	18-21	a	a	a	a	19	22-25	m	a	23-27	25-27
Thailand[2]	22	a	a	a	a	22	23-24	a	a	25-26	28-30
Tunisia[2]	a	a	a	a	a	21-22	23-25	a	23-24	a	25-27
Uruguay	22	a	a	a	a	22	23	25	a	a	24-26
Zimbabwe[2]	20-21	a	a	a	a	22	a	a	a	25	28

1. Duration categories for ISCED 5A – Medium: three years to less than five years; Long: five to six years; Very long: more than six years; and for ISCED 5B – Medium: two years to less than three years; Long: three years to less than five years; Very long: more than five years.
2. OECD estimate.
Source: OECD.

Table X1.2. **School years and financial years as used for the calculation of the indicators**

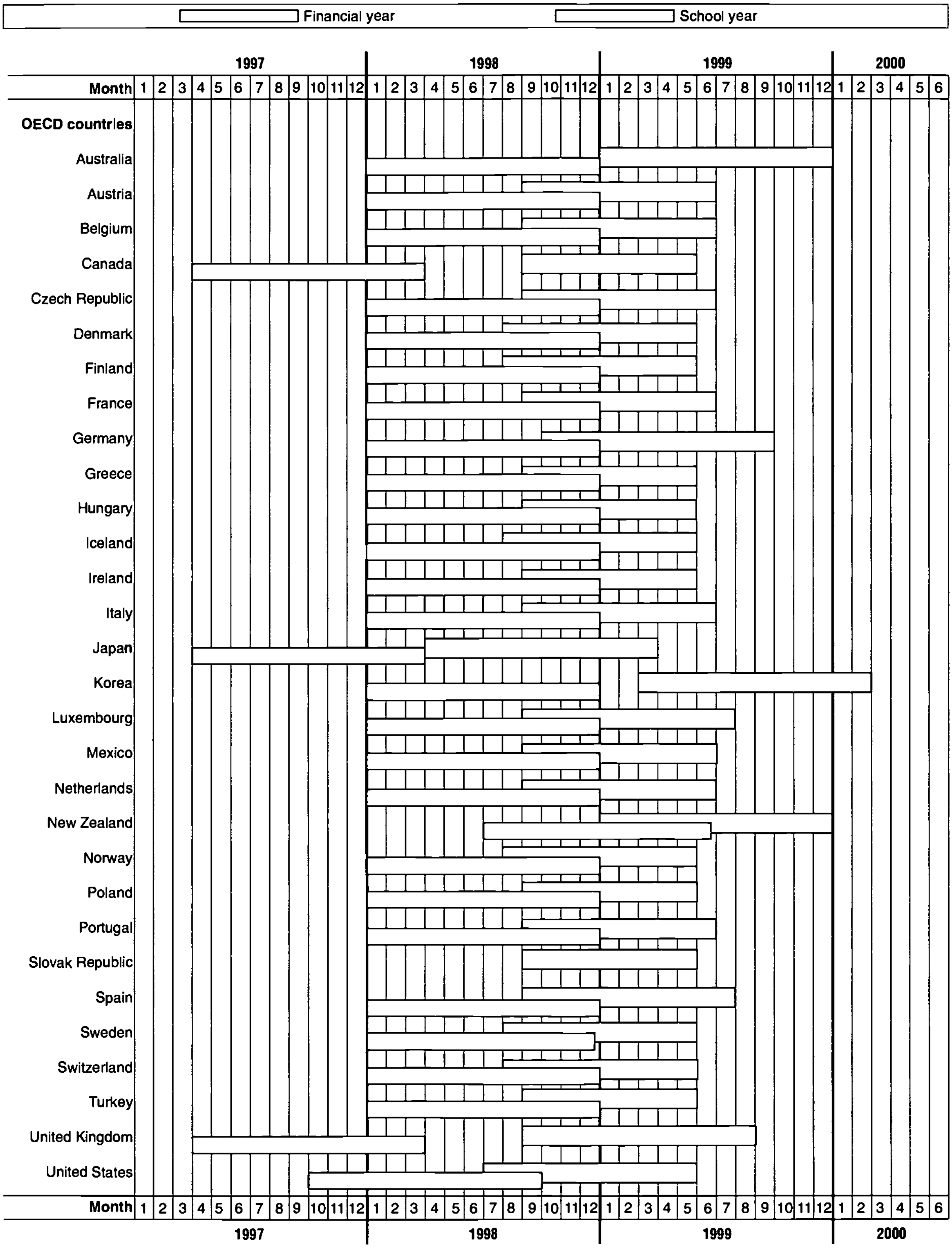
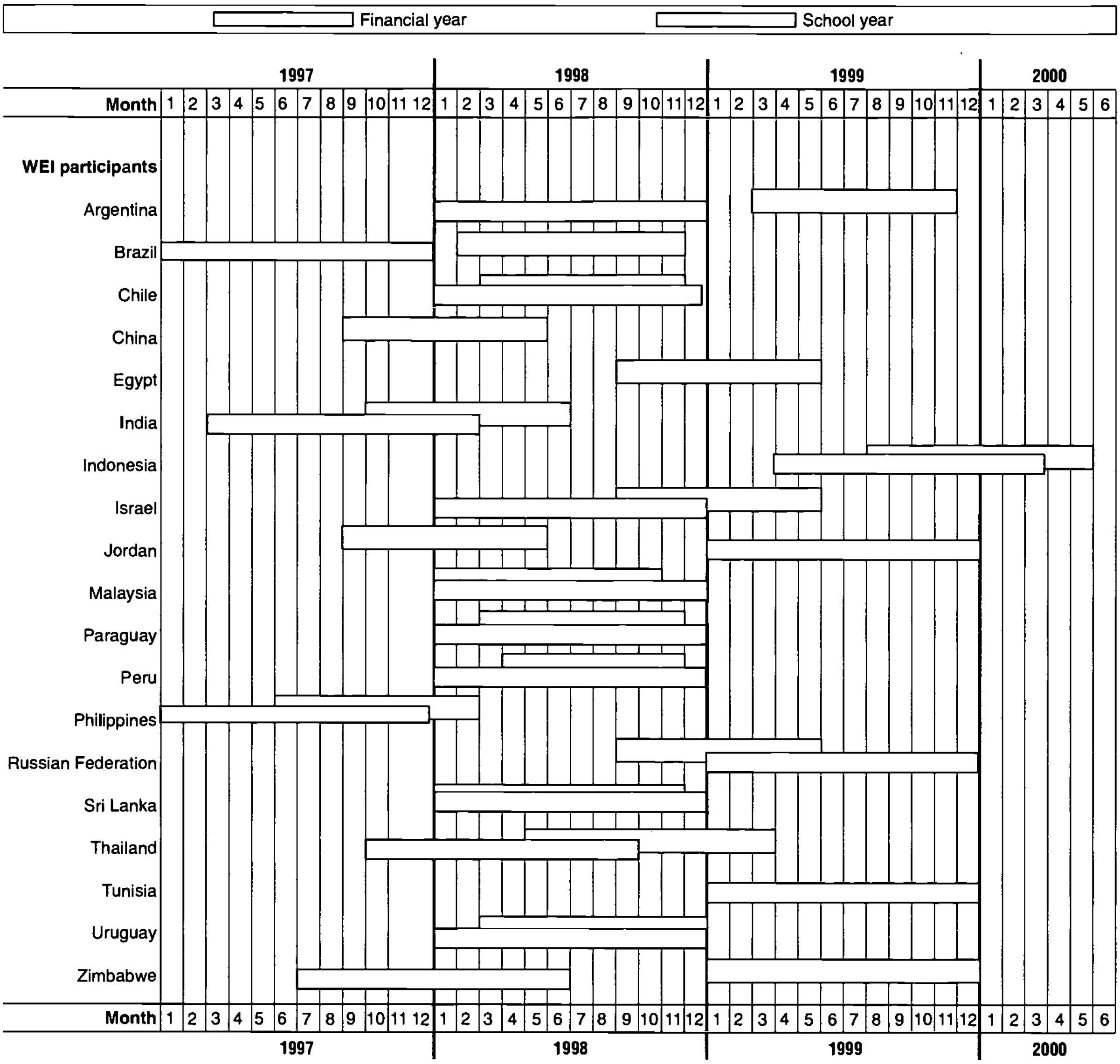


Table X1.2. **School years and financial years as used for the calculation of the indicators** *(cont.)*



Source: OECD.

Annex 2

BASIC REFERENCE STATISTICS

Table X2.1 **Overview of the economic context using basic variables (reference period: calendar year 1998, 1998 current prices)**

	Total public expenditure as a percentage of GDP	GDP per capita (in equivalent US dollars converted using PPPs)	GDP deflator (1995 = 100)	Total labour force participation rates (1999)[1]	Total unemployment rates (1999)[1]
Australia	34.4	24 226	103	73.9	7.0
Austria	51.6	23 583	103	72.2	4.7
Belgium	50.9	23 804	104	65.0	8.6
Canada	44.4	25 203	102	76.9	7.6
Czech Republic	46.2	12 939	128	73.1	8.7
Denmark	55.9	25 584	106	81.1	5.1
Finland	50.5	21 780	105	74.0	10.2
France[2]	52.9	21 676	104	68.1	11.8
Germany	47.5	22 904	103	71.8	8.7
Greece	50.7	14 327	121	64.1	10.8
Hungary	36.9	10 445	162	60.2	7.0
Iceland	39.8	25 260	111	89.8	2.0
Ireland	33.2	22 699	113	67.6	5.8
Italy	48.8	22 160	111	60.6	11.3
Japan	42.7	24 102	99	78.1	4.7
Korea	24.7	14 384	113	66.9	6.3
Luxembourg	43.6	37 348	107	63.3	2.4
Mexico	18.8	7 879	178	65.3	2.0
Netherlands	46.2	24 678	105	74.1	3.6
New Zealand	m	17 785	103	76.4	6.8
Norway	48.0	26 147	107	82.0	3.2
Poland	44.5	8 183	151	67.6	12.5
Portugal	42.0	15 592	111	74.4	4.4
Spain	40.7	17 027	108	64.4	15.8
Sweden	58.2	21 845	104	79.5	7.1
Switzerland	37.7	27 338	100	84.9	3.1
Turkey	m	6 544	567	59.2	7.3
United Kingdom	39.7	22 050	109	77.6	6.0
United States	m	32 262	105	79.5	4.2

1. Greece: year of reference 1998.
2. Excluding Overseas Departments (DOM).

Annex 2

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Table X2.2 **Basic reference statistics (reference period: calendar year 1998, 1998 current prices)**

	Gross Domestic Product (in millions of local currency)	Total public expenditure (in millions of local currency)	Total population in thousand (mid-year estimates)	Purchasing Power Parities (PPP)
Australia[1]	593 311	204 313	18 730	1.31
Austria	2 614 661	1 349 746	8 078	13.72
Belgium	9 081 545	4 626 982	10 203	37.39
Belgium (Fl.)	5 487 400	m	6 165	37.39
Canada	887 480	394 057	30 247	1.16
Czech Republic	1 798 300	830 280	10 295	13.50
Denmark	1 163 820	650 087	5 303	8.58
Finland	689 523	348 242	5 153	6.14
France[2]	8 450 819	4 424 198	58 299	6.69
Germany	3 784 400	1 798 220	82 029	2.01
Greece	35 872 501	18 172 355	10 516	238.09
Hungary	10 087 434	3 724 445	10 144	95.20
Iceland	577 406	229 888	274	83.43
Ireland	60 582	20 128	3 705	0.72
Italy	2 067 703 000	1 008 566 000	57 588	1 620.27
Japan	498 499 300	212 959 200	126 486	163.52
Korea	444 366 540	109 898 338	46 430	665.39
Luxembourg	665 735	290 076	429	41.55
Mexico	3 844 917	721 096	95 521	5.11
Netherlands	776 161	358 357	15 700	2.00
New Zealand[1]	98 913	m	3 792	1.47
Norway	1 109 348	532 805	4 432	9.57
Poland	553 560	246 194	38 666	1.75
Portugal	19 992 891	8 402 486	9 969	128.63
Spain	87 545 400	35 663 800	39 371	130.59
Sweden	1 905 349	1 109 271	8 851	9.85
Switzerland	380 940	143 569	7 110	1.96
Turkey	52 224 945 000	m	64 789	123 168.96
United Kingdom	851 653	338 256	59 237	0.65
United States	8 728 800	m	270 560	1.00

1. GDP calculated for the fiscal year.
2. Excluding Overseas Departments (DOM).

Table X2.3 **Basic reference statistics (reference period: calendar year 1995, 1995 current prices)**

	Gross Domestic Product (in millions of local currency)	Gross Domestic Product (in millions of local currency 1998 constant prices, base year = 1995)	Total public expenditure (in millions of local currency)	Total population in thousand (mid-year estimates)	Purchasing Power Parities (PPP)
Australia[1]	508 113	577 281	188 883	18 072	1.29
Austria	2 370 726	2 530 151	1 294 134	8 047	13.73
Belgium	8 133 764	8 717 501	4 328 161	10 137	36.74
Belgium (Fl.)	4 877 616	m	m	m	m
Canada	794 962	870 365	386 082	29 354	1.18
Czech Republic	1 381 049	1 401 300	783 678	10 331	10.81
Denmark	1 009 756	1 094 796	596 033	5 222	8.42
Finland	564 566	657 445	321 141	5 108	5.86
France[2]	7 662 391	8 137 089	4 104 369	57 753	6.46
Germany	3 523 000	3 673 500	1 928 460	81 661	2.02
Greece	27 235 205	29 738 163	14 895 505	10 454	203.08
Hungary	5 614 042	6 238 452	2 327 299	10 229	60.55
Iceland	451 372	519 795	186 846	267	75.87
Ireland	41 409	53 609	16 099	3 601	0.63
Italy	1 787 278 000	1 867 796 000	936 613 000	57 301	1 550.31
Japan	483 220 200	502 776 613	175 376 400	125 570	169.94
Korea	377 349 800	394 710 415	74 550 100	45 093	615.20
Luxembourg	538 448	624 024	245 543	413	38.87
Mexico	1 837 019	2 164 497	380 924	90 903	2.96
Netherlands	666 035	738 357	368 872	15 460	2.03
New Zealand[1]	91 461	95 723	m	3 656	1.47
Norway	928 745	1 040 355	457 033	4 358	9.14
Poland	308 104	365 411	147 561	38 588	1.14
Portugal	16 254 541	18 085 890	6 959 254	9 917	119.07
Spain	72 841 700	80 904 900	32 046 100	39 210	122.08
Sweden	1 713 316	1 830 971	1 103 482	8 827	9.73
Switzerland	363 329	379 417	133 827	7 041	2.01
Turkey	7 762 456 000	9 207 672 118	m	61 646	22 334.21
United Kingdom	713 979	777 936	317 104	58 606	0.65
United States	7 338 400	8 292 800	m	263 073	1.00

1. GDP calculated for the fiscal year.
2. Excluding Overseas Departments (DOM).

General notes

Definitions

Gini coefficient is used as a measure of income inequality that reflects the distribution of income in a population. The closer the coefficient is to 0, the more equal the distribution of income across the population, whereas the closer the coefficient is to 1, the greater the income inequality. **Gini coefficient** is a measure of dispersion within a group of values, calculated as the average difference between every pair of values divided by two times the average of the sample. The larger the coefficient, the higher the degree of dispersion.

Gross Domestic Product (GDP) refers to the producers' value of the gross outputs of resident producers, including distributive trades and transport, less the value of purchasers' intermediate consumption plus import duties. GDP is expressed in local money (in millions). For countries which provide this information for a reference year different from the calendar year (such as Australia and New Zealand) adjustments are made by linearly weighting their GDP between two adjacent national reference years to match the calendar year.

The **GDP deflator** is obtained by dividing the GDP expressed at current prices by the GDP expressed at constant prices. This provides an indication of the relative price level in a country. Data are based on the year 1995.

GDP per capita is the Gross Domestic Product (in equivalent US dollars converted using PPPs) divided by the population.

Purchasing Power Parity exchange rates (PPP) are the currency exchange rates that equalise the purchasing power of different currencies. This means that a given sum of money when converted into different currencies at the PPP rates, will buy the same basket of goods and services in all countries. In other words, PPPs are the rates of currency conversion which eliminate the differences in price levels among countries. Thus, when expenditure on GDP for different countries is converted into a common currency by means of PPPs, it is, in effect, expressed at the same set of international prices so that comparisons between countries reflect only differences in the volume of goods and services purchased.

Total public expenditure as used for the calculation of the education indicators, corresponds to the non-repayable current and capital expenditure of all levels of government. Current expenditure includes final consumption expenditure (*e.g.* compensation of employees, consumption of intermediate goods and services, consumption of fixed capital, and military expenditure), property income paid, subsidies, and other current transfers paid (*e.g.* social security, social assistance, pensions and other welfare benefits). Capital expenditure is spending to acquire and/or improve fixed capital assets, land, intangible assets, government stocks, and non-military, non-financial assets, and spending to finance net capital transfers.

The **unemployment rate** is calculated as the percentage of unemployed people in the labour force, where unemployment is defined according to the guidelines of the International Labour Office (ILO). The **labour force participation** rate for a particular age group relates to the percentage of individuals in the population of that age group who are either employed or unemployed, where these terms are defined according to the ILO guidelines. Rates for age groups are defined correspondingly.

Sources

- The 2000 edition of the *National Accounts of* OECD *countries: Main Aggregates, Volume* I.

The theoretical framework underpinning national accounts has been provided for many years by the United Nations' publication A System of National Accounts, which was released in 1968. An updated version was released in 1993 (commonly referred to as SNA93).

These data are available in the 2001 edition of *Education at a Glance*. However, National Accounts data are based on the old system (SNA 68) for **Japan, New Zealand, Switzerland and Turkey**.

- OECD Analytical Data Base, January 2001.

Annex 3

SOURCES, METHODS AND TECHNICAL NOTES

INDICATOR A1: Relative size of the school-age population

General notes

Methodology

- Calculation of estimates in Charts A1.3 A, B and C

The estimates in Chart A1.3 (A) are calculated as follows: let C(*i*) be the average percentage of five to 19-year-olds in all OECD countries for which data are available divided by the percentage of persons five to 19 years of age in the total population of country *i*. Let D(*i*) be the average percentage of 20 to 29-year-olds in all OECD countries for which data are available divided by the percentage of persons 20 to 29 years of age in the total population of country *i*.

Let A(*i*) be the expenditure on primary and secondary educational institutions as a percentage of GDP in country *i* and B(*i*) the expenditure on tertiary educational institutions as a percentage of GDP in country *i*. The expected difference for country *i* shown in Chart A1.3(A) is then calculated as **(C(*i*) –1)*A(*i*) + (D(*i*) – 1)***B(*i* **)**.

Chart A1.3 B and C show shifts in the ratio of students to teaching staff that would be expected if the proportion of the population five to 19 years or 20 to 29 years of age in each country was at the OECD average. Let C(*i*) and D(*i*) have the same definition as for Chart A1.3 (A). Let E(*i*) be the average ratio of students to teaching staff in all OECD countries for which data are available for primary and secondary education divided by the ratio of students to teaching staff of country *i* for primary and secondary education. Let F(*i*) be the average ratio of students to teaching staff in all OECD countries for which data are available for tertiary education divided by the ratio of students to teaching staff of country *i* for tertiary education.

The expected difference for country *i* shown in Chart A1.3 (B) is then calculated as (C(*i*) –1)*E(*i*). The expected difference for country *i* shown in Chart A1.3 (C) is then calculated as (D(*i*)-1)*F(*i*).

INDICATOR A2: Educational attainment of the adult population

General notes

Methodology

The most important change between ISCED-97 and ISCED-76 is the introduction of a multi-dimensional classification framework, allowing for the alignment of the educational content of programmes from different countries using multiple classification criteria (Table 1). These dimensions include: 1) the type of subsequent education or destination to which the programme leads; 2) the programme orientation (whether it be general education or pre-vocational education or vocational education); 3) the programme duration (for the ISCED Levels 3, 4 and 5, where programmes that vary widely in duration exist); and 4) position in the national degree and qualification structure. In ISCED-76, there was no such provision. For detailed notes see glossary and the OECD publication *Classifying Educational Programmes, Manual for* ISCED-97 *Implementation in* OECD *Countries, Edition* 1999.

Interpretation

In order to classify national educational attainment levels straddling two or more ISCED-97 levels, a simple rule is used consisting of attributing the programme to ISCED-97 level where most of the national educational activities are concentrated.

Table 2 comprises for each level of ISCED-97 the national programmes that are included in the respective indicators.

Table 1. **Description of ISCED-97 levels, classification criteria, and sub-categories**

0. PRE-PRIMARY LEVEL OF EDUCATION	**Main criteria**	**Auxiliary criteria**		
Initial stage of organised instruction, designed primarily to introduce very young children to a school-type environment.	Should be centre or school-based, be designed to meet the educational and developmental needs of children at least 3 years of age, and have staff that are adequately trained (*i.e.*, qualified) to provide an educational programme for the children.	Pedagogical qualifications for the teaching staff; implementation of a curriculum with educational elements.		
1. PRIMARY LEVEL OF EDUCATION	**Main criteria**	**Auxiliary criteria**		
Normally designed to give students a sound basic education in reading, writing and mathematics.	Beginning of systematic studies characteristic of primary education, *e.g.* reading, writing and mathematics. Entry into the nationally designated primary institutions or programmes. The commencement of reading activities alone is not a sufficient criteria for classification of an educational programme at ISCED 1.	In countries where the age of compulsory attendance (or at least the age at which virtually all students begin their education) comes after the beginning of systematic study in the subjects noted, the first year of compulsory attendance should be used to determine the boundary between ISCED 0 and 1.		
2. LOWER SECONDARY LEVEL OF EDUCATION	**Main criteria**	**Auxiliary criteria**	**Destination for which the programmes have been designed to prepare students**	**Programme orientation**
The lower secondary level of education generally continues the basic programmes of the primary level, although teaching is typically more subject-focused, often employing more specialised teachers who conduct classes in their field of specialisation.	Programmes at the start of level 2 should correspond to the point where programmes are beginning to be organised in a more subject-oriented pattern, using more specialised teachers conducting classes in their field of specialisation. If this organisational transition point does not correspond to a natural split in the boundaries between national educational programmes, then programmes should be split at the point where national programmes begin to reflect this organisational change.	If there is no clear break-point for this organisational change, however, then countries should artificially split national programmes into ISCED 1 and 2 at the end of 6 years of primary education. In countries with no system break between lower secondary and upper secondary education, and where lower secondary education lasts for more than 3 years, only the first 3 years following primary education should be counted as lower secondary education.	**A.** Programmes designed to prepare students for direct access to level 3 in a sequence which would ultimately lead to tertiary education, that is, entrance to ISCED 3A or 3B. **B.** Programmes designed to prepare students for direct access to programmes at level 3C. **C.** Programmes primarily designed for direct access to the labour market at the end of this level (sometimes referred to as "terminal' programmes).	**1.** Education which is not designed explicitly to prepare participants for a specific class of occupations or trades or for entry into further vocational/technical education programmes. Less than 25 per cent of the programme content is vocational or technical. **2.** Education mainly designed as an introduction to the world of work and as preparation for further vocational or technical education. Does not lead to a labour-market relevant qualification. Content is at least 25% vocational or technical. **3.** Education which prepares participants for direct entry, without further training, into specific occupations. Successful completion of such programmes leads to a labour-market relevant vocational qualification.
3. UPPER SECONDARY LEVEL OF EDUCATION	**Main criteria**	**Modular programmes**	**Destination for which the programmes have been designed to prepare students**	**Programme orientation**
The final stage of secondary education in most OECD countries. Instruction is often more organised along subject-matter lines than at ISCED level 2 and teachers typically need to have a higher level, or more subject-specific, qualification than at ISCED 2 There are substantial differences in the typical duration of ISCED 3 programmes both across and between countries, typically ranging from 2 to 5 years of schooling.	National boundaries between lower secondary and upper secondary education should be the dominant factor for splitting levels 2 and 3. Admission into educational programmes usually require the completion of ISCED 2 for admission, or a combination of basic education and life experience that demonstrates the ability to handle ISCED 3 subject matter.	An educational qualification is earned in a modular programme by combing blocks of courses, or modules, into a programme meeting specific curricular requirements. A single module, however, may not have a specific educational or labour market destination or a particular programme orientation. Modular programmes should be classified at level "3" only, without reference to the educational or labour market destination of the programme.	**A.** ISCED 3A: programmes at level 3 designed to provide direct access to ISCED 5A. **B.** ISCED 3B: programmes at level 3 designed to provide direct access to ISCED 5B. **C.** ISCED 3C: programmes at level 3 not designed to lead directly to ISCED 5A or 5B. Therefore, these programmes lead directly to labour market, ISCED 4 programmes or other ISCED 3 programmes.	**1.** Education which is not designed explicitly to prepare participants for a specific class of occupations or trades or for entry into further vocational/technical education programmes. Less than 25 per cent of the programme content is vocational or technical. **2.** Education mainly designed as an introduction to the world of work and as preparation for further vocational or technical education. Does not lead to a labour-market relevant qualification. Content is at least 25% vocational or technical. **3.** Education which prepares participants for direct entry, without further training, into specific occupations. Successful completion of such programmes leads to a labour-market relevant vocational qualification.

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Table 1. **Description of ISCED-97 levels, classification criteria, and sub-categories** *(cont.)*

4. POST-SECONDARY NON-TERTIARY	**Main criteria**	**Types of programmes which can fit into level 4**	**Destination for which the programmes have been designed to prepare students**	**Programme orientation**
These programmes straddle the boundary between upper secondary and post-secondary education from an international point of view, even though they might clearly be considered as upper secondary or post-secondary programmes in a national context.	Students entering ISCED 4 programmes will typically have completed ISCED 3. As described above, successful completion of any programme at level 3A or 3B counts as a level 3 completion.	The first type are short vocational programmes where either the content is not considered "tertiary" in many OECD countries or the programme didn't meet the duration requirement for ISCED 5B–at least 2 years FTE since the start of level 5.	**A.** Programmes at level 4, designed to provide direct access to ISCED 5A.	**1.** Education which is not designed explicitly to prepare participants for a specific class of occupations or trades or for entry into further vocational/technical education programmes. Less than 25 per cent of the programme content is vocational or technical.
They are often not significantly more advanced than programmes at ISCED 3 but they serve to broaden the knowledge of participants who have already completed a programme at level 3. The students are typically older than those in ISCED 3 programmes.	Programme duration: ISCED4 programmes typically have a full-time equivalent duration of between 6 months and 2 years.	These programmes are often designed for students who have completed level 3, although a formal ISCED level 3 qualification may not be required for entry.	**B.** Programmes at level 4, designed to provide direct access to ISCED 5A.	**2.** Education mainly designed as an introduction to the world of work and as preparation for further vocational or technical education. Does not lead to a labour-market relevant qualification. Content is at least 25% vocational or technical.
		The second type of programmes are nationally considered as upper secondary programmes, even though entrants to these programmes will have typically already completed another upper secondary programme (*i.e.*, second-cycle programmes).	**C.** Programmes at level 4 not designed to lead directly to ISCED 5A or 5B. These programmes lead directly to labour market or other ISCED 4 programmes.	**3.** Education which prepares participants for direct entry, without further training, into specific occupations. Successful completion of such programmes leads to a labour-market relevant vocational qualification.
5. FIRST STAGE OF TERTIARY EDUCATION	**Classification criteria for level and sub-categories (5A and 5B)**		**Cumulative theoretical duration at tertiary level**	**Position in the national degree and qualifications structure**
ISCED 5 programmes have an educational content more advanced than those offered at levels 3 and 4.	Entry to these programmes normally requires the successful completion of ISCED level 3A or 3B or a similar qualification at ISCED level 4A or 4B.			
ISCED 5A: programmes that are largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skills requirements.	The minimum cumulative theoretical duration (at tertiary level) is of three years (FTE). The faculty must have advanced research credentials. Completion of a research project or thesis may be involved.	The programmes provide the level of education required for entry into a profession with high skills requirements or an advanced research programme.	**A.** Duration categories: Medium: 3 to less than 5 years; Long: 5 to 6 years; Very long: More than 6 years.	**A.** Categories: Intermediate; First; Second; Third and further. Intermediate degrees are not counted as graduation in this publication.
ISCED 5B: programmes that are generally more practical/technical/occupationally specific than ISCED 5A programmes.	Programmes are more practically oriented and occupationally specific than programmes at ISCED 5A and they do not prepare students for direct access to advanced research programmes. They have a minimum of two years' full-time equivalent duration.	The programme content is typically designed to prepare students to enter a particular occupation.	**B.** Duration categories: Short: 2 to less than 3 years; Medium: 3 to less than 5 years; Long: 5 to 6 years; Very long: More than 6 years.	**B.** Categories: Intermediate; First; Second; Third and further. Intermediate degrees are not counted as graduation in this publication.
6. SECOND STAGE OF TERTIARY EDUCATION (LEADING TO AN ADVANCED RESEARCH QUALIFICATION)				
This level is reserved for tertiary programmes that lead to the award of an advanced research qualification. The programmes are devoted to advanced study and original research.	The level requires the submission of a thesis or dissertation of publishable quality that is the product of original research and represents a significant contribution to knowledge. It is not solely based on course-work.	It prepares recipients for faculty posts in institutions offering ISCED 5A programmes, as well as research posts in government and industry.		

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Table 2. **Standardised presentation of national ISCED-97 mappings**[1]

	Pre-primary and primary education	Lower secondary education	Upper secondary education				Post-secondary non-tertiary education	Tertiary-type B education	Tertiary-type A education	Advanced research programmes
	ISCED 0/1	ISCED 2	ISCED 3C Short	ISCED 3C Long	ISCED 3B	ISCED 3A	ISCED 4	ISCED 5B	ISCED 5A	ISCED 6
OECD countries										
Australia		0/1/2, 2B/2C			3B	3A , 3A/4		5B	5A	5A/6
Austria		0/1/2			3B	3A	4A	5B		5A/6
Belgium	1	2		3CL/4		3A		5B	5A	5A/6
Canada		0/1/2, 2				3	4	4/5B	5A	5A/6
Czech Republic	0/1	2		3CL		3A , 3A/4				5A/6
Denmark	1	2			3B/4B	3A/4A		5B	5A	6
Finland	0/1	2				3		5B	5A	6
France	0, 1	2A , 2B	3CS	3CL	3B	3A	4A , 4	5B, 5AI	5A	5A/6
Germany	1	2A			3B	3A	4	5B	5A	
Greece	0/1	2		3CL	3B	3A	4C	5B	5A	6
Hungary	0/1	2		3C , 3C/4B		3A			5A	5A/6
Iceland	0/1	2A, 2C	3CS			3A	4C	5B	5A	6
Ireland	0/1	2				3A/4		5B/4		5A/6
Italy	0/1	2	3CS	3CL		3A/3B	4C		5A/5B	6
Japan		0/1/2				3A/3C		5B		5A/6
Korea	0/1	2				3A/3C		5B		5A/6
Mexico	0, 1	2 , 2/3A		3CL				5B		5A/6
Netherlands	1	2				3A/3C, 3C			4/5B/5A	
New Zealand	0, 1			3CL		3A	4C	5B	5A	5A/6
Norway	0, 1	2A		3C		3A	4C	5B	5A	6
Poland		1/2	3CS			3A	4B			5B/5A/6
Portugal	1	2				3/4		5B	5A	6
Spain	0/1, 1	2	3CS		3B	3A	4B	4C/5B , 5B	5A	6
Sweden	1	2				3A, 3		4/5B	5A	5A/6
Switzerland	0/1	2A		3CL	3B/4B	3A/4A		5B		5A/6
Turkey	0, 1	2			3B	3A				5A/6
United Kingdom		2	3CS	3CL		3A		5B	5A	6
United States	0/1	2				3		5B, 5AI	5A	6
WEI participants										
Argentina	0/1	2A				3A		5B	5A	6
Brazil	0/1	2A				3A	4C	5B	5A	6
Chile	0/1	2A			3B	3A		5B	5A	6
China	0/1	2A				3A	4C	5B	5A	6
Egypt	0/1	2A/2C			3B/C	3A	4C	5B	5A	6
India	0/1	2A/2C				3A		5B	5A	6
Indonesia	0/1	2A			3B	3A		5B	5A	6
Jordan	0/1	2A		3C		3A		5B	5A	6
Malaysia[2]	0/1	2A	3CS		3B	3A	4C	5B	5A	6
Paraguay	0/1	2A/2B		3C		3A		5B	5A	6
Peru	0/1	2A			3B	3A		5B	5A	6
Philippines	0/1	2A				3A	4A/B 4C		5A	6
Russian Federation	0/1	2A		3C		3A 3A+5B	4C	3A+5B 5B	5A	6
Sri Lanka	0/1	2A			3B	3A		5B	5A	6
Thailand	0/1	2A			3B	3A	4C	5B	5A	6
Tunisia	0/1	2A			3B	3A		5B	5A	6
Uruguay	0/1	2A			3B	3A		5B	5A	6
Zimbabwe	0/1	2A		3C		3A	4C	5B	5A	6

Note: ISCED 5AI (Tertiary-type A , intermediate degree).
1. The cells of this table indicate, for each country, the national programme categories that are included in the international levels of education indicated by the column headers.
2. 3C programmes are considered short because they are not considered equivalent to ISCED 3 completion.
Source: OECD.

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Sources

Notes on specific countries

France: There is a clear distinction in France between the ISCED 3C short level (National level V, first level of qualification equivalent to CAP-BEP) and the higher levels which group together 3C long, 3B and 3A programmes (national level IV, second level of qualification, the general, technological, and professional Baccalauréats). For France therefore, students who have successfully completed secondary education and those who have a level of qualification corresponding to a short ISCED 3C programme are considered to have completed the ISCED3 level.

United Kingdom: United Kingdom attainment data at upper secondary level (ISCED 3) include a sizeable proportion of persons (about 7 per cent of the population) whose highest level of attainment will in general have been reached at age 16. Although the programmes which they have completed do not formally satisfy the duration criterion for the completion of ISCED level 3, they can lead to a qualification (5 A-C grades in GCSEs) that the United Kingdom considers to be at the same attainment level as that conferred by completion of a number of programmes which do satisfy the ISCED criterion. In other words, the usual ISCED classification criteria have been relaxed for this group, for reasons of consistency with the national qualification structure.

INDICATOR A3: Links between human capital and economic growth

General notes

Sources

www.oecd.org/eco/wp/onlinewp.htm#2001 No. 282, *Does human capital matter for growth in* OECD *countries.*

INDICATOR B1: Educational expenditure per student

See also notes on Indicator B1.

General notes

Methodology

- Reference period

Adjustments were made for countries in which the financial year and the school year do not coincide. In order to match the enrolment data with the financial year 1998, a weighted average of the enrolment data for the academic years 199/8 and 1998/9 was calculated. The data were weighted in accordance with the proportion of each school year that fell within the financial year 1998 (see Annex 2).

- Estimation of expenditure per tertiary student over the duration of studies.

Two alternative methods were employed to calculate the average duration of tertiary studies: the approximation formula and the chain method. For both methods, it should be noted that the result does not give the average duration needed for a student to graduate since all students participating in tertiary education are taken into account, including drop-outs. Hence, the figure can be interpreted as the average length of time for which students stay in tertiary education until they either graduate or drop out. However, in the case of countries with low drop-out rates (see Education at a Glance 2000), the result can serve as a good proxy for duration until graduation.

The estimates of cumulative expenditure on education over the average duration of tertiary studies were obtained by multiplying annual expenditure per student by an estimate of the average duration of tertiary studies.

Using the **approximation formula**, the latter estimate was approximated by the rate of turnover of the existing stock of enrolments, obtained from the ratio of flow data (entrants and leavers) to the corresponding numbers of students enrolled. The formula $D = (S_{t-1} + S_t)/(Z_t + A_t)$ was used for this calculation, where S_t is the number of students enrolled at the end of year *t*, S_{t-1} is the number of students at the beginning of year *t* (approximated by the number of students enrolled at the end of the preceding school year), Z_t is the number of students who are in their first year of study in year *t*, and A_t is the number of leavers in school year *t* (approximated by $S_{t-1} + Z_t - S_t$). Full-time equivalents were used to estimate enrolments. The number of entrants to full-time programmes was used to estimate the inflow. All participants were included, even those who might not obtain a degree.

The estimate is based on a number of simplifying assumptions: first, it is assumed that transition rates are constant over time. Second, expenditure in the current reference year is assumed to be typical of the total duration of studies.

Table 3. Sources

	Statistical agency	Source	Reference period	Coverage	Primary sampling unit	Size of the sample	Overall rate of non-response	Remarks
Australia	Australian Bureau of Statistics	Australian Bureau of Statistics, Labour Force Australia	May 1999	Data refer to persons aged 15 to 64.	Individual respondents within households	63 003	7.3%	Households are selected and all non-visiting adults aged 15 to 64 are interviewed.
Austria	Austrian Central Statistical Office	Quarterly Mikrocensus	The data refer to annual averages of quarterly the Mikrocensus sample survey	Data refer to persons aged 15 and over.	Households	31 500		
Belgium	Eurostat	European Labour Force Survey	Spring quarter	Data refer to persons aged 15 to 64.	Households	35 000		Private households
Canada	Statistics Canada	Monthly Labour Force Survey	The annual data are averages of monthly estimates	Data refer to persons aged 15 and over.	Households			
Czech Republic	Czech Statistical Office (CSU)	Labour Force Sample Survey	Annual average of quarterly estimates	Data refer to persons aged 15 and over.	Households	Around 26 500 households, *i.e.*, approx 72 000 persons, *i.e.* approx 60 000 persons aged 15 and over.	1st interview 20%, 2nd – 5th interview 2.5%.	Classification according to LFS questionnaire until 1997 used.
Denmark	Eurostat	European Labour Force Survey	Spring quarter	Data refer to persons aged 15 to 64.	individuals	15 600		Private households
Finland	Eurostat	European Labour Force Survey	Spring quarter	Data refer to persons aged 15 to 64.	Individuals	19 717		Private households
France	INSEE	Labour Force Survey	March	Data refer to persons aged 15 and over.	Households	85 000	10%	
Germany	Federal Statistical Office	Labour Force Survey (Microcensus)	19 April – 25 April 1999	Data refer to persons aged 15 and over.	Households	150 000	5.1 per cent for Questions on Educational Attainment.	
Greece	National Statistical Services of Greece	Labour Force Survey	2nd quarter of 1999	Total population of private households.	Households	30 772 households.	5% of the total surveyed households	
Hungary	Hungarian Central Statistical Office	Labour Force Survey	Data are averages of quarterly figures		Households	50 000 persons in 1993-97, 64 000 since 1998.	20-21 %	Armed forces are not included in the data.
Iceland	Statistics Iceland	Icelandic Labour Force Survey	The annual data are averages of bi-annual (April and November) estimates	All resident persons aged 16 to 74 years.	Individuals	4 200	12%	
Ireland	Central Statistics Office	Beginning 4th quarter 1997, a new Quarterly National Household Survey (QHNS) was implemented, replacing the annual Labour Force Survey (LFS)	The ONHS is a continuous survey Results are compiled for seasonal quarters – *i.e.* quarter two refers to March, April and May	Data refer to persons aged 15 and over.	Households	39 000		
Italy	ISTAT	Household Labour Force Survey	The data refers to the 2nd quarter of each year (2nd week of April)	Data refer to persons aged 15 and over.	Households	75 512		

Table 3. **Sources** (*cont.*)

	Statistical agency	Source	Reference period	Coverage	Primary sampling unit	Size of the sample	Overall rate of non-response	Remarks
Japan	Statistics Bureau, Management and Coordination Agency	Special Survey on the Labour Force Survey	February 1998-1999	Data refer to persons aged 15 and over.	Households			
Korea	National Statistical Office	Annual Report on the Economically Active Population Survey	Annual average of monthly estimates			30 000 households.		
Luxembourg	Eurostat	European Labour Force Survey	Spring quarter	Data refer to persons aged 15 to 64.	Households	8 500		Private households
Mexico	Secretaría del Trabajo y Previsíon Social (STPS)	Encuesta Nacional de Empleo (ENE)	Bi-annual survey since 1991, yearly since 1995	The survey covers civilian resident population aged 12 years and over excluding armed forces.	Households	48 000 in 1997 (national) and 135 000 in 1998 (by state).	Around 15%	In odds years the survey is representative for state, what increases the sample significantly.
Netherlands	Centraal Bureau voor de Statistiek, Statistics Netherlands	Labour Force Survey			Households	60 000		
New Zealand	Statistics New-Zealand	Quarterly Household Labour Force Survey	The annual data are averages of quarterly estimates	Data refer to persons aged 15 and over.	Households			
Norway	Statistik Sentralbyraa	Quarterly Labour Force Survey	Annual average	Data refer to persons aged 15 and over.	Individuals	24 000		
Poland	Glowny Urzad Statystyczny	Labour Force Survey	The data are averages of published quarterly figures	Data refer to persons aged 15 and over.	Households	About 22 000 households.	1997 – 9.6% 1998 – 11.6%	
Portugal	Eurostat	European Labour Force Survey	Spring quarter	Data refer to persons aged 15 to 64.	Households	20 000		Private households
Spain	Instituto Nacional de Estadística	Quarterly Household Labour Force Survey	The annual data are averages of quarterly estimates	Data refer to persons aged 16 and over.	Households	65 622	11.13%	Part of the non-response is treated. Final rate of non-response: 5,90%.
Sweden	Statistiska Centralbyran	Monthly Labour Force Survey	The annual figures are averages of monthly estimates	Data refer to persons aged 16 and over.	Individuals	17 000		
Switzerland	OFS	Labour Force Survey	The annual data refer to the second quarter (April-June)	Data refer to persons aged 15 and over.	Households			
Turkey	State Institute of Statistics (SIS)	Household Labour Force Survey	Semi-annual survey since October 1988 Annual average of April and October	Data refer to persons aged 15 and over.	Households	15 000 Household in each survey.	10% (1 500 households in each survey)	
United Kingdom	ONS	Labour Force Survey	Spring Labour Force Survey	Data refer to persons aged 15 and over.	Households			
United States	Census Bureau and Bureau of Labour Statistics	March Current Population Survey (CPS)	The annual data are based on March survey	Data refer to persons aged 16 and over.	Households	64 659 household, 56 768 families, and 131 617 persons.	7.2 % based on households	

Source: OECD.

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Using the **chain method**, the duration of study is defined as the sum of the probabilities, for each year of study, that a student who has entered tertiary education will still be enrolled in that year of study. The duration is therefore defined as, $D = \sum_{i=1}^{10} q_i$ where q_i is the probability that a student will reach the *i*-th year of study, *i.e.*, the proportion of individuals in the *i*-th year of study relative to those studying in the first year *i*-1 years before. With the chain method all conditional probabilities are derived from data for two adjacent years, the reference year and the preceding year. Given the number of students *s* in year *i* of study in year *t* and the number of students in year *i*-1 of study in year *t*-1, the transition rates can be calculated for each year of study as $a_{i,t} = s_{i,t}/s_{i-1,t-1}$. The transition rates give, for each year of study, the probability that a student in year *i*-1 will continue studying in year *i*. The product of all transition rates 1 to I gives the probability, for year *i* of study, that a student who started *i*-1 years before will still be enrolled in year *i* of study. Finally, the sum of all conditional probabilities gives an estimate of the average duration of tertiary education. Expenditure in the current reference year is assumed to be typical of the total duration of studies.

Notes on specific countries

Coverage

See also notes on Indicator B2.

Australia: Previously, university enrolments included some students in overseas campuses. These have been excluded, starting with this edition. This correction affects the number of tertiary students, and consequently the expenditure per student, by 2.8 per cent. Enrolment data for the Vocational Education and Training sector are now based on AQF data rather than stream data, so that there will be breaks in series at ISCED 2, 3, 4 and 5B.

United Kingdom: Upper secondary vocational students are excluded from the calculation of expenditure per student, as they were counted on a "whole year" rather than on a "snapshot" basis. Calculations of expenditure per student exclude expenditure under the "nursery voucher" scheme, whereby the Government provides parents with grants to purchase early childhood education from private and voluntary education providers. This is because a proportion of these parents enrolled their children in playgroups or day nurseries, which are excluded from the scope of the data collection.

- Estimation of the duration of tertiary education calculated using the chain method

Canada: The 6th year of study includes the 7th, 8th, 9th and 10th years of study.

Germany: The model for the calculation of the average duration of tertiary studies was modified. Students beyond the 10th year of study were not taken fully into consideration. Students in the 10th year of study or beyond amounted to around 10 per cent of total enrolment in the academic year 1994/5. The reported duration is a lower boundary of total duration and probably underestimated. In general, non-university tertiary education has a duration of 2 years, but part-time courses take up to 4 years.

Germany and **Italy:** No distinction is made between part-time and full-time studies at the university level. However, for expenditure over the duration of studies the effect balances out, since reporting part-time students as full-time students leads both to an underestimate of annual expenditure and to an overestimate of duration of studies.

Greece: The 5th year of tertiary-type B study includes the 6th year and beyond. The 7th year of tertiary-type A and advanced research programmes includes the 8th year and beyond. This leads to an underestimate of duration.

Iceland: Data were partly estimated, as students in programmes at level 5A (2nd degree) and level 6 are often not signed up for thesis credits until the thesis is completed. Data were therefore adjusted to correct for consequent overestimating of the number of part-time students and underestimating of full-time equivalents.

Ireland: Full-time education only.

Korea: The maximum duration of non-university education is 3 years. The 6th and 8th years and beyond of university education are included in the 7th year of study.

Poland: Approximately 20 to 24 per cent of all students were missing from the group from which duration was estimated. It is assumed that the excluded groups do not differ significantly in their duration of studies.

United Kingdom: The chain method was amended slightly in order to use the available UK data. Average durations were calculated separately using the chain method for each of the main types of course at tertiary level. To take account of the fact that many students go on to take a further course after their initial course, these figures were then combined according to the numbers of students following each of the main pathways at tertiary level. The total average durations shown for university and all tertiary levels are therefore weighted averages of the individual average durations of each type of course. Coverage excludes those studying in further education institutions, though these account for less than 10 per cent of all students at the tertiary level.

Interpretation

Switzerland: Expenditure per student is very high at the university level. This is mainly due to the structure of the university system: a high number of universities in relation to the size of the country (partly due to the three language regions), the small size of some universities, a wide range of provision at each university, and relatively low student/teaching staff ratios. Furthermore, teachers' salaries at university level are comparatively high.

Sources

2000 UNESCO/OECD/EUROSTAT (UOE) data collection on education statistics. National sources are:

Australia: Department of Employment, Education, Training and Youth Affairs, Higher Education Division, Canberra; Australian Bureau of Statistics, "Expenditure on Education Finance" collection; in the case of regional government expenditure, state government data (for public institutions) and school data (for private institutions) were used; "Collection of National Financial Data on Vocational Education and Training"; New South Wales Technical and Further Education, unpublished data.

Austria: Austrian Central Statistical Office, Vienna.

Belgium: Flemish Community: Ministry of the Flemish Community, Education Department, Brussels; French Community: Ministry of the French Community, Education, Research and Training Department, Brussels; German Community: Ministry of the German-speaking Community, Eupen.

Canada: Statistics Canada, Ottawa.

Czech Republic: Closing account of the Government of the Czech Republic; regular survey of the Institute for Information on Education; unpublished information from the Ministry of Education, Youth and Sports and the Ministry of Agriculture.

Denmark: Ministry of Education, Department of Economic Affairs, Copenhagen.

Finland: Statistics Finland, Helsinki.

France: Ministry of National Education, Higher Education and Research, Directorate of Evaluation and Planning, Paris.

Germany: Federal Office of Statistics, Wiesbaden.

Greece: Ministry of National Education and Religious Affairs, Directorate of Investment Planning and Operational Research, Athens.

Hungary: Ministry of Culture and Education, Ministry of Finance, Central Statistical Office, Budapest.

Iceland: National Economics Institute, Reykjavik.

Ireland: Department of Education, Statistics Section, Dublin.

Italy: National Institute of Statistics (ISTAT), Rome; Ministry of Public Education, Statistical Service, Rome.

Japan: Ministry of Education, Science, Sports and Culture, Research and Statistics Planning Division, Tokyo.

Korea: Korean Educational Development Institute, Educational Information Research Centre, Seoul.

Mexico: Secretariat of Public Education.

Netherlands: Central Bureau for Statistics, Department for Statistics of Education, Voorburg; Ministry of Education and Science, Zoetermeer.

New Zealand: Ministry of Education, Wellington.

Norway: Statistical Central Office, Division for Population, Education and Regional Conditions, Kongsvinger; the Royal Norwegian Ministry of Education, Research and Church Affairs, Oslo.

Poland: Central Statistical Office, Republic of Poland, Warsaw.

Portugal: Ministry of Education, Office of Research and Planning, Department of Programming, Lisbon.

Spain: National Institute of Statistics, Sub-directorate General of Social Research and Statistics, Madrid; Ministry of Education, Planning and Statistical Office, Madrid; Ministry of Labour, Madrid.

Sweden: Swedish National Agency for Education (*Skolverket*), Stockholm; Swedish National Agency for Higher Education (H*ogskoleverket*); Statistics Sweden, Örebro.

Switzerland: Federal Statistical Office, Berne.

Turkey: Ministry of National Education and Higher Education Council, Final financial record.

United Kingdom: Department for Education and Employment, Darlington.

United States: Department of Education, Office of Educational Research and Improvement, National Centre for Education Statistics, Washington, DC.

INDICATOR B2: Expenditure on educational institutions relative to Gross Domestic Product

General notes

Methodology

- Changes in GDP in comparison with earlier editions

The theoretical framework underpinning the calculation of GDP has been provided for many years by the United Nations' publication *A System of National Accounts*, which was released in 1968. An updated version was released in 1993 (commonly referred to as SNA93). The change from SNA68 to SNA93 causes some changes in the indicator that are not related to changes in the education system. This change affects all OECD countries, with the following exceptions. For **Australia, Finland, Ireland and Norway,** SNA93 was already used in Education at a Glance 2000. National Accounts data are based on the old system, SNA68, in the case of **Japan, New Zealand, Switzerland and Turkey**.

- Reference period

Statistics on educational expenditure relate to the financial year 1998. For countries where GDP is not reported for the same reference period as data on educational finance, GDP is estimated as: w_{t-1} (GDP_{t-1}) + w_t (GDP_t), where w_t and w_{t-1} are the weights for the respective portions of the two reference periods for GDP which fall within the educational financial year. Adjustments were made for **Canada, Japan, the United Kingdom and the United States.**

- Calculation of estimates in Charts B2.4 (A), (B) and (C)

Charts B2.4 (A), (B) and (C) show shifts in educational expenditure that would be expected if participation by children in a country's education were at the OECD average level. The expected enrolment for a given country is calculated as follows: let POP(i,k) be the population in country i at age k and let AER(k,l) be the OECD average enrolment rate at age k at level of education l. The expected enrolment is then calculated as:

$$EE(i) = \sum_{k=5}^{29} POP(i,k) * AER(k,l)$$

The expected difference in expenditure for country I at level l, as shown in Charts B2.4(A), (B) and (C), is calculated as EX(i,l)*(EE(i,l)/RE(i,l) – EX(i,l), with RE(i,l) representing the observed enrolment at level l in country i. The OECD average enrolment rate is calculated using data from countries for which enrolment data by single year of age are available. EX (i,l) represents the expenditure relative to GDP for country i at level l.

- Calculation of index in Table B2.2

Table B2.2 shows the changes in expenditure on educational services between 1995 and 1998. All expenditure reported for 1995 was expressed in 1998 constant dollars, adjusted to the price level of 1998 using the GDP deflator (see Annex 2).

Notes on specific countries

Coverage

Australia: Starting with this edition, data on educational finance are reported on an academic/calendar year basis and not on a financial year basis, *i.e.* from July to June, which was used in previous editions. The coverage of the collection increased, by about 1 per cent of total educational expenditure, due to inclusion of boarding school expenses and the running costs for the Department of Education Training and Youth Affairs. The 1995 data were compiled using the same methodology.

Austria: Expenditure on R&D in the tertiary sector is partially excluded. Some expenditure by public institutions other than the Ministry of Education is excluded (social insurance bodies, chambers of trade and crafts, and federal funds – *Sozialversicherungsträger, Kammern, Bundesfonds*).

Belgium: Expenditure on retirement by central government is excluded. Research expenditure is included only if covered by funds provided by the Community authorities responsible for education. Research funds from other public and private sources are excluded. Notes on Belgium apply equally to the **Flemish Community of Belgium**.

Czech Republic: Data from the Ministries of Justice, Defence and Internal Affairs are not included.

Denmark: The allocation of expenditure on early childhood, primary and lower secondary education is estimated on the basis of the corresponding enrolments. Expenditure on pre-primary education includes some expenditure on day care. Day care activities are fully integrated into the school day and not costed separately. It is debatable whether this expenditure should be classified as educational or not. While Denmark includes this expenditure, **Finland** and **Sweden** exclude expenditure on similar programmes.

Finland: The coverage of expenditure on pre-primary education has changed considerably in comparison with previous editions. Estimated kindergarten expenditure on day care and child care for 3 to 6-year-olds is excluded. This change in reporting also applies to the trend data presented here. Expenditure on apprenticeship training is included for the first time.

Government transfers and payments to private entities, except financial aid to students, are excluded. Funds from foreign sources are excluded. Local government expenditure also contains private expenditure.

France: All expenditure excludes overseas departments (*départements d'outre mer*, DOM). Gross domestic product and total public expenditure were adjusted accordingly.

Germany: Expenditure on the following programmes is not included in total expenditure: training of trainee civil servants in public service; colleges of nursing; agricultural training centres; and public and private expenditure on institutions providing ancillary services at the tertiary level (*Studentenwerk*). Payments by private households and other private entities to government-dependent institutions are excluded.

Greece: Expenditure on early childhood education is included in expenditure on primary education.

Japan, New Zealand, Switzerland and Turkey: GDP is based on the System of National Accounts 1968 and not fully comparable with other countries (see above).

Japan: Expenditure on special training colleges, "miscellaneous schools" and educational administration are not allocated by level.

Korea: Expenditure on R&D in tertiary education institutions is excluded with the exception of R&D funded by the Ministry of Education. Expenditure on educational programmes provided by ministries other than the Ministry of Education is excluded (KAIST, Police College, College of External Affairs, Tax Officers' College and Military Academy).

Portugal: Regional and local transfers to the private sector are not included. Local direct expenditure on educational institutions is not included.

Turkey: Regional direct expenditure on educational institutions is not included.

United Kingdom: Funds originating in the public sector spent by households on tuition fees are included, but not amounts spent by households from their own resources. Expenditure on independent private institutions is excluded. Expenditure on government-supported, work-based training programmes is included (approximately £1,600 million) but was not included in previous editions of Education at a Glance. Inclusion is appropriate, as the majority of these programmes involve part-time attendance at a further education college, which falls within the scope of the UOE data collection.

United States: Funds for major federal R&D centres administered by universities are excluded. Pre-primary education only includes pre-primary classes in public and private primary schools. It excludes independent private schools, which provide a large part of pre-primary education.

Interpretation

Denmark: Data on expenditure at the tertiary level include all expenditure on R&D at the tertiary level. In previous years expenditure on R&D was excluded. Comparisons with previous editions cannot be made due to significant underestimation of expenditure in previous editions.

Finland: Programmes of tertiary-type B are being abolished. The last intake to 5B programmes was in autumn 1998. Expenditure on 5B programmes is hence decreasing. At the same time, polytechnic education (tertiary-type A) is rapidly growing, as is also expenditure on 5A programmes.

Sources

See Indicator B1.

INDICATOR B3: Relative proportions of public and private investment in educational institutions

Notes on specific countries

See notes on Indicator B2.

Netherlands: Private spending on R&D at higher education is excluded. The private proportion of expenditure at the tertiary level is therefore underestimated.

INDICATOR B4: Total public expenditure on education

- Changes in total public expenditure in comparison with earlier editions

The theoretical framework underpinning the calculation of total public expenditure has been provided for many years by the United Nations' publication A *System of National Accounts*, which was released in 1968. An updated version was released in 1993 (commonly referred to as SNA93). The change from SNA68 to SNA93 causes some changes in the indicator that are not related to changes in the education system. This change affects all OECD countries, with the following exceptions. For **Australia, Finland, Ireland and Norway** SNA93 was already used in Education at a Glance 2000. National Accounts data are based on the old system, SNA68, in the case of **Japan, New Zealand, Switzerland and Turkey**.

■ Notes on specific countries

See notes on Indicator B2.

Finland: Public expenditure on educational institutions includes some private expenditure.

INDICATOR B5: Support for students and households through public subsidies

■ Notes on specific countries

See notes on Indicator B2.

Canada, Denmark and Germany: Subsidies in kind, such as free or reduced-price travel on public transport systems, is excluded.

Czech Republic: Some scholarships awarded by central government are included in direct payments to educational institutions.

Ireland: Students in tertiary education benefit from subsidised travel on the bus and rail systems, which are owned and funded by the State. The expenditure involved in this subsidy is currently unknown. Students in tertiary colleges and universities can make use of limited on-campus medical facilities funded both from central (exchequer) grants and from registration fees paid by the students themselves. The level of government funding in this area is not known.

Switzerland: Fees for health insurance are publicly subsidised for students from low-income backgrounds. These subsidies amount to several tens of millions of Swiss francs but are excluded.

INDICATOR B6: Expenditure on institutions by service category and by resource category

See also notes on Indicators B1 *and* B2.

■ Notes on specific countries

Coverage of ancillary services

Expenditure by educational institutions on ancillary services, such as student meals, boarding and housing on campus and student transportation should include fees paid by students and families for those services. However, countries have uneven coverage of private spending on ancillary services. While a number of countries exclude private spending on ancillary services, Australia, France, Hungary, Spain, Turkey and the United States provide information on private spending on ancillary services. The following table shows the amount of fees for ancillary services paid by students and families to educational institutions. Subtracting the amount shown here from Table B6.2 enables comparisons of expenditure on educational institutions net of private fees for ancillary services.

Private expenditure on ancillary services provided by educational institutions, as included in Table B6.2

	Primary to post-secondary non-tertiary education	Tertiary education
Australia	0.03	a
Czech Republic	0.09	0.03
France	0.19	0.04
Hungary	0.12	0.01
Spain	0.05	–
Turkey	0.00	0.05
United States	0.08	0.16

Source: OECD.

Ireland: Ancillary services at the primary to post-secondary non-tertiary level include only school transport.

R&D *coverage*

Canada: Sponsored research is currently being reported in the UOE data collection without overhead costs. Total expenditure on R&D is therefore underestimated.

Czech Republic: Expenditure on separately funded or separately budgeted research only.

France: Expenditure on R&D excludes all funds specifically allocated to R&D, such as subsidies, contracts and special funds. These are included in the OECD/DSTI reporting and account for approx. 0.2 per cent of GDP, or 50 per cent of total expenditure on R&D.

Ireland: Some expenditure on R&D, which is reported to DSTI, is excluded from UOE reporting (16.5 million IEP). This accounts for approx. 10 per cent of all expenditure on tertiary R&D, and for 2 per cent of total expenditure on ISCED 5 and 6.

Mexico: Expenditure on separately funded or separately budgeted research only.

Netherlands: Spending on R&D in tertiary education by private non-profit organisations, business enterprises and abroad is excluded (*derde geldstroom*). This accounts for 26 per cent of all spending on R&D, or 0.08 per cent of GDP.

Notes on distribution of current and capital expenditure

Canada: Current expenditure in independent private institutions at ISCED 5B includes capital expenditure.

Hungary: The significant decrease in government support for capital expenditure in tertiary education can be attributed to the fact that substantial investments were made in the previous year, 1997.

Italy: In comparison with previous editions, educational expenditure by resource category shows a lower percentage of staff compensation (for teaching and non-teaching staff) and a higher percentage of other current expenditure. This is due to the introduction of a new tax, "IRAP", and to the concurrent abolition of some additions to gross salaries.

Japan: Expenditure on part-time employees is included in current expenditure other than compensation of personnel.

Sweden: School and university buildings are rented. Payments for rent are included in current expenditure.

Sources

See Indicator B1.

INDICATOR C1: Participation in education over the lifecycle

General notes

Methodology

- Reference dates

Statistics that relate participation data to population data are published for the reference date that was used by national authorities for these statistics. The assumption is made that age references in the enrolment data refer to 1 January of the reference year. For **Australia**, 30 June is used as the reference date for both enrolments and population data. For **Japan**, 1 October is used as the reference date for ages.

The dates or periods at which students, educational staff and educational institutions were counted have not been provided to the Secretariat by all countries. Some countries collect these statistics through surveys or administrative records at the beginning of the school year while others collect them during the school year, and yet others at the end of the school year or at multiple points during the school year. It should be noted that differences in the reference dates between, for example, enrolment data and population data can lead to errors in calculation (*e.g.*, net enrolment rates exceeding 100 per cent) where there is a significant decrease or increase over time in any of the variables involved. If the reference date for students' ages used in the enrolment data differs from the reference date for the population data (usually 1 January of the reference year), this can be a further source of error in enrolment rates.

Sources: *For* OECD *countries see Indicator* B1.

Table C1.1

Methodology

School expectancy (in years) under current conditions excludes all education for children younger than five years. It includes adult persons of all ages who are enrolled in formal education. School expectancy is calculated by adding the net enrolment rates for each single year of age. Data by single year of age are not available for ages 30 and above. For persons aged 30 to 39, enrolment rates were estimated on the basis of five-year age bands, and for persons 40 and over, enrolment rates were estimated on the basis of the cohort size of 39 year-olds.

Notes on specific countries

Australia: Students participating in Open Learning Courses and two private universities are excluded. Pre-primary enrolment is not included when males and females are reported separately. It is assumed that the overwhelming majority at the pre-primary level would be in full-time education. University enrolments now exclude all students in overseas campuses. There are breaks in series in ISCED 2, 3, 4 and 5B enrolments in the Vocational Education and Training sector, which are now based on AQF data rather than stream data.

Austria: For upper secondary, post-secondary non-tertiary and tertiary-type B education the age group 25 to 29 years could not be broken down by single year of age. Age distribution for tertiary-type B education (ISCED 5B) is estimated. Enrolments of auxiliary nurses in training programmes were included for the first time, adding 1 000 enrolments to upper secondary education (ISCED 3).

Belgium: Data concerning entrepeneurship training courses (ISCED 4B part-time education) and apprenticeship training courses (ISCED 3 full-time education) are *not included* for the Flemish Community. Data for independent private institutions are *not available*. Since institutions of this type are not very numerous, data for all types of institution are only slightly underestimated. There is no longer a distinction between public and private institutions in tertiary-type A and B "hogescholen' and full-time and part-time university education (ISCED 5A and 6).

Denmark: Adult education is *excluded*.

Finland: Data on full-time students include both full-time and part-time enrolments. Students are not classified into full-time and part-time students on the basis of their study activities. Enrolment at ISCED 0 non-school establishments (children's day care centres and kindergartens: 95 per cent) is estimated. The estimate is based on information supplied by individual municipalities to Statistics Finland and information from the National Research and Development Centre for Welfare and Health.

Germany: Students pursuing doctoral studies (ISCED 6) are not obliged to register at university and it is not possible to estimate their number.

Hungary: The distribution of students aged 26 to 29 and 31 to 40 by single year is estimated for tertiary-type A and advanced research programmes. The age distribution for tertiary-type B students has been estimated from the age distribution for tertiary-type A education.

Ireland: Nursing students who follow a type of dual training, with education and training taking place in hospitals only, are *excluded*. Most but not all adult education is excluded. Adult education includes part-time studies at ISCED 3 and 5 undertaken by persons returning to education after an interruption of some years. Most pre-primary enrolments are *included* because data are not collected from many privately owned pre-schools. Coverage of part-time enrolment data is uneven. Many part-time students in independent private colleges at ISCED levels 3 and 5 have been *excluded*. Only full-session part-time students (doing courses lasting approximately the full year) have been *included* in the data.

Japan: Estimates are provided for enrolment by age in primary and secondary education on the assumption that all students at the same grade are of the same age. Part-time enrolment at the upper secondary level includes students in correspondence courses at upper secondary schools. A part-time student equals one full-time equivalent at this level. Part-time students at the tertiary level include students studying by correspondence (including the University of the Air) and persons attending any type of college. A part-time student again equals one full-time equivalent. Special Training Colleges (general courses) and Miscellaneous Schools (there is no entrance requirement for these schools/courses) are not allocated by level.

Netherlands: Only educational programmes with a theoretical duration of more than 12 months are *included*.

Spain: Under the new education system, lower secondary education has been increased from 2 years to 4 years and upper secondary education has been decreased from 4 years to 2 years.

Turkey: Data for under 5-year-olds are included in pre-primary education.

United Kingdom: Coverage of enrolments in ISCED3 vocational programmes have been expanded, being reported for the first time on a "whole-year" basis rather than as a "snap-shot". This has had a significant effect on indicators such as "school expectancy".

Table C1.2

Notes on specific countries

Belgium, France and Iceland: The enrolment rates for 3 to 4-year-olds exceed 100 per cent. This is due to the fact that a large number of children below the age of 3 are enrolled in formal education and are included in Table C1.2 (between 15 and 25 per cent of the total number of children enrolled under the age of 4).

Germany, Japan, Portugal and the United States: Net enrolment rates exceed 100 for some ages because there are different reference dates for school enrolment and demographic data.

Luxembourg: Students who are residents of Luxembourg but attend a school in a neighbouring country are *excluded*.

Spain: Net enrolment rates exceed 100 in some cases. The reason lies partly in the nature of the population forecasts by the National Institute of Statistics, and partly in a possible over-reporting of enrolments by schools.

Table C1.3

Australia, Belgium, Ireland, Japan, the Netherlands and the United Kingdom: See notes on Table C1.1.

Table C1.4

Classification

Educational institutions are classified as either public or private according to whether a public agency or a private entity has the ultimate power to make decisions concerning the institution's affairs. The extent to which an institution receives its funding from public or private sources does *not* determine the classification status of the institution. An institution is classified as ***private*** if it is controlled and managed by a non-governmental organisation (*e.g.*, a Church, a Trade Union or a business enterprise), or if its Governing Board consists mostly of members not selected by a public agency. The terms "***government-dependent***" and "***independent***" refer only to the degree of a private institution's dependence on funding from government sources; they do not refer to the degree of government direction or regulation. A government-dependent private institution is one that receives more than 50 per cent of its core funding from government agencies. An independent private institution is one that receives less than 50 per cent of its core funding from government agencies.

Notes on specific countries

Japan: Upper secondary part-time students are not broken down by type of institution.

United Kingdom: Index of change in enrolments is based on upper secondary general programmes only.

Table C1.5

Methodology

- Expected hours of training over the life cycle and participation rates in continuing education and training

Data on continuing education and training are from the First and Second International Adult Literacy Surveys (IALS and SIALS), which were undertaken by Statistics Canada and the OECD. For details on IALS and SIALS see Indicator F3. The sample sizes are relatively small for nationally representative surveys, and this necessarily limits the extent to which it is possible to analyse sub-groups within the population without encountering cell sizes that are too small to allow reasonable extrapolation to the general population.

Indicator C1 combines information on participation in formal education, based on the UOE data, and in continuing education, based on IALS and SIALS. When these two sources are combined, the problem of different coverage of training activities arises. IALS and SIALS asked for any education and training, which included education covered by UOE. In order to complement the participation statistics in formal education it is necessary to exclude from IALS and SIALS data the education of students most likely to be covered by UOE. IALS and SIALS data were therefore not included for those students taking at least one course that exceeded ten weeks and led to a university degree, a college diploma or certificate, a trade or vocational diploma or certificate, or an apprenticeship certificate.

The expected number of hours of training was calculated as the sum of the average number of hours of training by single year of age at ages 15 to 64, $SH = \sum_{a=15}^{64} \overline{H_a}$, where $\overline{H_a}$ is the average number of hours of training for persons aged *a*. $\overline{H_a}$ is calculated as $\overline{H_a} = \frac{\sum H}{\sum Weight}$, where H is the number of hours per participant and weight is the IALS sampling weight for each participant. All standard errors were calculated using jack-knife estimates based on the 30 replicate weight. For details see IALS Microdata Package Guide Section 8.1.

IALS and SIALS participants were asked in how many courses they had been enrolled in the last 12 months. More details were obtained for the three most recent courses. The number of hours was then calculated on the basis of these three courses. In order not to underestimate the total number of hours for those students participating in four or more courses, information on these courses was imputed.

All respondents were divided into classes by country (*i*) and number of courses taken (*nc*). For each group, the average duration of a single course was calculated as $\overline{C_{i,nc}} = \frac{\sum (h_{i,nc}/3)}{\sum weight_{i,nc}}$. For each person in country *i* who took *nc* courses, with $nc > 3$, the total number of hours of training was calculated as the number of hours in the most recent three courses (h) plus the average duration of further courses times the number of further courses: $H = h + C_{i,nc} * (nc - 3)$. If the adjusted number of hours exceeded 1 600 hours for a given respondent, the number of hours was adjusted to 1600.

INDICATOR C2: Participation in and graduation from secondary education

General notes

Sources : For OECD *countries see Indicator* B1.

Table C2.1

Notes on specific countries

Canada: Some pre-vocational enrolments are included in general programmes.

Table C2.2

Methodology

In order to calculate gross graduation rates, countries identified the age at which graduation typically occurs. The graduates themselves, however, could be of any age. To estimate gross graduation rates, the number of graduates is divided by the population at the typical graduation age (Annex 1). In many countries, defining a typical age of graduation is difficult because ages of graduates vary. Typical ages of graduation are shown in Annex 1.

The ***unduplicated count of all* ISCED 3 *graduates*** gives the number of persons who graduate in the reference period from any ISCED 3 programme **for the first time**, *i.e.*, students who have not obtained an ISCED 3 (A, B or C) qualification in **previous** reference periods. For example, students who graduated from ISCED 3A programmes in the period of reference but obtained a short ISCED 3C graduation in an earlier year should (correctly) be reported as ISCED 3A graduates, but must be excluded from the unduplicated count of graduates in column 2 of Table C2.2. Similar cases may occur in the reporting of vocational and general programmes.

Notes on specific countries

Belgium (Flemish Community): Graduation rates are subject to bias for three reasons: *i)* there may be double counting, particularly in part-time programmes; *ii)* diplomas in part-time programmes are awarded to students whose age is much higher than the typical age; and *iii)* many diplomas are awarded to students aged over 18 or 19 years. ISCED 3C short programmes are excluded from the upper secondary graduation rates in order to reduce double counting.

Czech Republic: The low upper secondary graduation rate is due to a change in lower secondary rules in 1995/6. It became mandatory to complete lower secondary education in lower secondary schools (previously students were able to complete lower secondary education in upper secondary schools).

Hungary: The number of upper secondary graduates *includes* all those enrolled in the last year of study. As a consequence, the number of graduates is *overestimated* because of double counting of repeaters and inclusion of those students who failed.

Sweden: For graduates from vocational programmes, only the *gymnasium* is *included*; adult education is *excluded*. National schools for adults and students in schools for the mentally retarded are not separated into general or vocational. Thus, general and vocational do not add up to the total number of students.

Table C2.3

Methodology

Same methodology as explained in notes on Table C2.2.

Notes on specific countries

Norway: Educational statistics were revised during 2000, and many courses formerly reported at the ISCED 5B level are now reported as ISCED 4.

INDICATOR C3: Access to and participation in tertiary education

General notes

See general notes on Indicator C1.

Source: *For* OECD *countries see Indicator* B1.

Table C3.1

Methodology

- Calculation of net entry rates

The net entry rates given in Table C3.1 represent the proportion of persons of a synthetic age cohort who enter a certain level of tertiary education at one point during their lives. The net entry rate is defined as the sum of net entry rates for single ages. The total net entry rate is therefore the sum of the proportions of new entrants to tertiary-type A and B aged *i* to the total population aged *i*, at all ages. Since data by single year are only available for ages 15 to 29, the net entry rates for older students are estimated from data for 5-year age bands.

- Calculation of gross entry rates

Czech Republic, Germany, Japan, Korea, Poland and the Slovak Republic (tertiary type-B only): No data on new entrants by age were provided. As a result, net entry rates could not be calculated and gross entry rates were calculated instead. Gross entry rates are the ratio of all entrants, regardless of their age, to the size of the population at the typical age of entry. Gross entry rates are more easily influenced by differences in the size of population by single year of age. Taking into account the effect of changing cohort sizes, all gross rates presented here were tested for possible error. The error is well below five percentage points.

• Calculation of age at the 25th, 50th and 75th percentiles

The ages given for the 25th, 50th and 75th percentiles are linear approximations from data by single year of age. The *i*-th percentile is calculated as follows: let age *k* be the age at which less than *i* per cent of new entrants are younger than *k* years of age and more than *i* per cent are younger than *k*+1. If P(<*k*) is the percentage of new entrants aged less than *k* and P(*k*) the percentage of new entrants aged *k*, then the age at the *i*-th percentile is k + (i-P(<k)/(P(k).

Notes on specific countries

Czech Republic: Only new entrants to full-time education are included for tertiary-type A programmes.

Finland: Tertiary-type B education is being abolished in Finland (the last intake was autumn 1998). Consequently there are substantial increases in the numbers of new entrants in tertiary-type A education.

Hungary: The age distribution for part-time students is estimated.

Israel: Statistics on entrants to tertiary-type B programmes include older students returning to a first programme or a second programme.

Spain: Statistics on entrants to tertiary-type B programmes include older students returning to a first programme.

Tables C3.2 and C3.4

Methodology

"Expected years of tertiary education" was calculated by adding the net enrolment rates for each single year of age from the age of 17 onwards. Data by single year of age were not available for ages 30 and above. For persons aged 30 to 39, enrolment rates were estimated on the basis of five-year age bands and for persons aged 40 and over, enrolment rates were estimated from the sizes of cohorts of 39-year-olds.

Notes on specific countries

Czech Republic: Some tertiary-type B first programmes could be classified as tertiary-type A programmes. There is no clear distinction.

Germany: Tertiary education excludes advanced research programmes, for which no information is available.

Hungary: See note in Annex 3, Indicator C1, Table C1.1.

Table C3.3

Classification

See notes on classification for Table C1.4.

Notes on specific countries

Belgium: The distinction between public and private institutions is no longer valid for full-time school-based non-university education (ISCED 5B and 5A "*hogescholen*") and full-time and part-time university education (ISCED 5A and 6).

Ireland: The proportion of students in independent private institutions at the tertiary-type B level has increased since 1998 due to an extension of coverage, particularly in relation to part-time students.

New Zealand: There is an increase in the number of students in private government-dependent institutions because some private training establishments have been entitled to the same funding as public institutions with effect from 1999.

Table C3.4

Methodology

• Change in total tertiary enrolment

The change in total tertiary enrolment is expressed as an index, the base year of which is 1995 (100). The number of tertiary students in 1999 is therefore expressed as a percentage of the number of tertiary students in 1995. The impact of demographic change on total enrolment is calculated by applying the enrolment rates measured in 1995 to the population data for 1999: population change was taken into account while enrolment rates by single year of age were kept constant at the 1995 level. The impact of changing enrolment rates is calculated by applying the enrolment rates measured in 1999 to the population data for 1995, *i.e.*, the enrolment rates by single year of age for 1999 are multiplied by the population by single year of age for 1995 to obtain the total number of students that could be expected if the population had been constant since 1995.

INDICATOR C4: Completion of tertiary education

General notes

Sources: *For* OECD *countries see Indicator* B1.

Table C4.1

Methodology

• Calculation of the country mean for medium and long tertiary-type A programmes

Countries which included the graduates of medium tertiary-type A programmes among the graduates of long programmes (*x*-code for short programmes) are counted as zero in the calculation of the country mean for medium programmes. In a similar manner, the countries using an *x*-code for long programmes, caused by inclusion of long programmes in the category for short programmes, are counted as zero in the country average for long programmes. This is necessary in order to ensure that the country averages for short programmes and long programmes add up to the correct country average for all first-stage university programmes.

• Duration categories

Tertiary-type A programmes can be sub-classified by the theoretical cumulative duration of programmes. For initial programmes at tertiary level, the cumulative theoretical duration is simply the theoretical full-time equivalent duration of those programmes from the beginning of Level 5. For second programmes, cumulative duration is calculated by adding the minimum entrance requirements of the programme (*i.e*,. full-time equivalent years of prerequisite tertiary education) to the full-time equivalent duration of the programme. For degrees or qualifications where the full-time equivalent duration is unknown (*i.e.*, courses of study designed explicitly for flexible or part-time study), cumulative duration is calculated on the basis of the duration of more traditional degree or qualification programmes with a similar level of educational content. The following duration categories are included in ISCED-97:

- Short: 2 to less than 3 years.
- Medium: 3 to less than 5 years.
- Long: 5 to 6 years.
- Very long: more than 6 years.

As "short" programmes would not meet the minimum duration requirement for classification at ISCED 5A, this category is only appropriate for intermediate programmes in the national qualification and degree structure (see below). That is, programmes of less than three years' duration must be a component or a stage of a longer programme in order to be classified at level 5A. Individuals who complete these short programmes would not be counted as 5A graduates, however.

Typical ages of graduation are shown in Annex 1.

Notes on specific countries

Czech Republic : Some Bachelor's programmes give direct access to second Master's programmes. These combined Bachelor's and Master's programmes form "compound" programmes equivalent to "standard" Master's programmes, and students do not explicitly graduate from these programmes with a Bachelor's degree. Therefore the number of first programmes at tertiary-type A level is slightly underestimated.

Finland: Specialist degrees in medicine, dentistry and veterinary science, and general staff officers' degrees, are reported as second degrees although they are classified as third degrees at ISCED 5A. This results in an overestimate of students graduating from second degrees because of double counting.

Iceland: There has been an increase in qualifications in tertiary-type A education. Teaching programmes for pre-primary teachers, teachers of the mentally handicapped and teachers of physical education have been incorporated into the University College of Education and do now provide a B.Ed. degree, giving access to further academic studies. These graduates have been classified as 5A while the students completing the old-style teachers' programmes are still classified as 5B.

Norway: There is a decrease in the number of graduates from tertiary-type A first degrees with a duration of three to five years. This is due to the exclusion of graduates from the practical teacher training course (*praktisk pedagogisk seminar*), which is a one-year programme to prepare graduates for teaching (roughly 3 700 graduates).

Sweden: Some technical programmes which were not previously reported are now included. This has increased the number of graduates from tertiary-type B education (roughly 1 500 graduates). Tertiary-type A programmes have been redistributed according to the "complementary dimension" concept.

- **Table C4.3**

- **Notes on specific countries**

Classification

- Tertiary qualifications by field of study

The fields of education used follow the revised ISCED classification by field of education. For definitions and instructions refer to the ISCED Classification (UNESCO, 1997). The classification is in accordance with the fields of training defined in the *Fields of Training – Manual* (EUROSTAT, 1999).

- **Notes on specific countries**

Iceland and Norway: See notes for Table C4.1.

- **Table C4.4**

Classification

The category "science" comprises: "Life sciences", "Physical sciences", "Mathematics and statistics", "Computing", "Engineering and engineering trades", "Manufacturing and processing" and "Architecture and building". Since the new ISCED classification (see notes on tertiary qualifications by field of study) has been used, the results presented in Table C4.4 are not directly comparable with those published in the 1997 edition of *Education at a Glance* or in earlier editions.

- **Table C4.5**

See notes on Table C4.3.

- **Notes on specific countries**

Sweden: There are very few programmes considered "tertiary-type A second degrees" in the Swedish education system. The total number of graduates in this category in 1998/99 was 721 (*i.e.*, only 2.2 per cent of all graduates). Only university diplomas in midwifery, special education and psychotherapy, all of which are dominated by female graduates, are considered tertiary-type A second degrees.

INDICATOR C5: Students receiving additional resources to access the curriculum

- **Notes on specific countries**

Coverage

Belgium (Flemish Community): The numbers of students receiving additional resources via "remedial teaching", which relates to cross-national category B and ISCED 1 only, are not included since the numbers are unknown. Data refer to primary, lower and upper secondary education (ISCED 1, 2 and 3).

France: Data for Category A students in special schools include some upper secondary students (ISCED 3). The total number of students receiving additional resources is estimated. The gender breakdown in special schools refers to an estimated number of children who attend EREA (special regional schools). The gender breakdown in special classes is estimated and applies only to the categories of non French-speaking students and students with learning difficulties.

Greece: The total number of students in regular classes refers to cross-national category C only, *i.e.*, children with socio-economic, cultural and educational difficulties. Data for cross-national category A students in regular classes are included in special classes.

Hungary: Data for students in special and regular classes include some upper secondary students (ISCED 3). The gender breakdown in special schools applies only to the categories of students with visual, hearing and motor disabilities.

Ireland: Data refer to primary education (ISCED 1) only. However, children in ISCED 2 and 3 are included in the data for special schools. The figures used to calculate the percentages were therefore adjusted appropriately. The gender breakdown in special classes is estimated.

Italy: Approximately 96 000 students with foreign citizenship (ISCED 0 to 3) were enrolled in Italian schools in 1998 to 1999. Those students with foreign citizenship in cross-national category C (estimated at 1.4 per cent) were not included in the data as they did not receive additional resources directly. Rather, these resources were allocated to schools in order to promote and increase activities and projects related to integration such as intercultural education, language training, etc. The denominator used to calculate proportions is estimated.

Japan: Gender breakdown for students in special schools refers only to blind and deaf students.

Luxembourg: Data include some pre-primary pupils (ISCED 0).

Mexico: The total number of students receiving additional resources includes 37 279 students in special classes for whom there is an estimated breakdown into cross-national categories A and B. Numbers of institutions in cross-national categories A and B and of teaching staff in special classes are included in the figures for special schools.

Poland: Data refer to ISCED 1. ISCED 2 is not applicable. Data refer to special schools only. Special classes and regular classes have not yet been reported.

Spain: Data for students in special classes are included in data for students in special schools.

Sweden: The total number of SEN students in inclusive settings cannot as yet be supplied. Thus data in regular classes refer only to children with mental retardation, children with hearing impairment and physical disabilities, and students receiving tuition in mother tongue/Swedish as a second language. (Some of the students in the other four categories used in Sweden also receive tuition in a mother tongue and/or Swedish as a second language, but their special educational need is not primarily of this sort).

The gender breakdown for students in regular classes is estimated and refers only to students receiving tuition in mother tongue and/or Swedish as a second language.

Switzerland: The percentages of category A, B and C students are based on the data available at the federal level. Category C includes only special classes for children newly arriving in a school from a different language background. These special classes are to be found in large cities. Smaller communities admit these children into regular classes with support. These special classes are designed as an interim support measure for a year. After this period, children receive additional support in regular classes. Therefore, most children with a foreign first language are integrated and receive support which is not reflected in the data provided by the Federal Office of Statistics (only special schools and special classes are reported). Category C is therefore proportionally much larger, but these figures are not reflected in the federal statistics. For example, in the Canton of Zurich, 9 per cent of all school children receive support in German because their mother tongue is not German. Around 12 per cent receive support because of their low performance in German or mathematics. This support is provided while they attend regular classes.

Turkey: Data refer to ISCED 1 only. [The duration of primary education is eight years and it has not been divided into two ISCED levels (primary and lower secondary education)].

United Kingdom: Data include some pre-primary pupils (ISCED 0). Data for students in special classes are included in data for students in regular classes.

United States: Data include some upper secondary students (ISCED 3) in Categories A and B and thus are likely to be overestimated. Since students in Category C are estimated, the total number of students receiving additional resources is estimated. Furthermore, it is assumed that Category C students are all located in regular classes.

Sources

Data are from an on-going collection and refinement of data on students with disabilities, learning and behavioural difficulties or social disadvantage receiving additional resources to access the curriculum that is administered by the OECD. They refer to the academic year 1998 to 1999.

Table 4.1 **Sources on national household surveys on adult education and training (Indicator C6)**

	Name of survey	Sample size	Reference period	Data collection method	Proxy interviews	Sampling method	Definition of job-related training	Inclusion of informal types of training	Informal types can be shown separately	Non-response rate	Regularity
Australia 1996/1997	Surveyon Education and Training	22 704	12 months	Face-to-face	Not allowed	Random-route	All measures which the interviewed persons identify as job or career-related	Yes, but not included in the reported CET-data (participation rates) [job-related]	Yes		Irregularly
Canada 1996	Adult Education and Training Survey	39 217	12 months	Telephone	Not allowed	Random-route	All measures which the interviewed persons identify as job or career-related	No		15%	Regularly
Finland 1995	Adult Education Survey	5 005	12 months	Face-to-face	Not allowed	Random-route	All measures which the interviewed persons identify as job or career-related	Yes, but not included in the reported CET-data (participation rates)	Yes	18%	Regularly
Germany 1997	Reporting System on Continuing Education and Training	7 071	12 months	Face-to-face	Not allowed	Random-route	All measures which the interviewed persons identify as job or career-related	Yes, but not included in the reported CET-data (participation rates) [job-related]	Yes	33.8%	Regularly
Sweden 1999	Staff Training Survey	12 778	6 months	Telephone	Not allowed	Use of registers	All measures payed for or sponsored by the employer	No		16.4%	Regularly
Switzerland 1998/1999	Labour Force Survey	~ 16 000-18 000	12 months	Telephone	Not allowed		All measures which the interviewed persons identify as job or career-related	Yes, but there is no distinction between job-related and non job-related	Yes		Regularly
United States 1999	National Household Education Survey	8 114	12 months	Telephone	Not allowed	Random-route	All measures which the interviewed persons identify as job or career-related	No		15.9%	Regularly

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INDICATOR C6: Participation in continuing education and training among the adult population

Notes on specific countries

Sources

Portugal: Data reported on job-related training is not comparable, and no data were requested on duration of training.

Sweden: Data reported on job-related training is not comparable, and no data were requested on duration of training.

Table 4.2. **Participation of the population 25 to 64 years of age in job-related continuing education and training (Chart C6.2, Table 6.1*a*)**

		Participation rate			
		Lower secondary	Upper secondary and post-secondary non-tertiary	Tertiary	All levels
Australia	M + W	19	33	55	30
IALS 95/96	Men	23	35	57	34
	Women	16	30	52	26
Canada	M + W	14	32	50	30
IALS 94/95	Men	18	32	61	33
	Women	9	31	38	26
Finland	M + W	20	45	62	40
IALS 98/99	Men	20	45	62	40
	Women	21	46	62	40
Switzerland	M + W	7	31	41	26
IALS	Men	9	35	42	32
	Women	5	27	40	21
United States	M + W	11	34	62	38
IALS 94/95	Men	15	32	66	39
	Women	7	36	58	37

Source: International Adult Literacy Survey 1994-1998.

INDICATOR D1: Salaries of teachers in public primary and secondary schools

Notes on specific countries

Interpretation

Tables D1.1a-d.

Austria: Thirty-four years is the maximum period of time taken by teachers employed under public-law contracts to progress from starting to top salary. For teachers employed under private-law contracts, the maximum number of years from minimum to maximum salary is 38.

Belgium (Flemish Community): In consultation with the French community, the Flemish Community decided not to include "haard- en standplaatsvergoeding" (home and local allowances) as part of gross salaries. These allowances are awarded under certain conditions if the index-linked gross salary does not exceed a fixed sum. Only the index-linked gross salaries of teachers at ISCED 0, 1 and 2, at the beginning of their teaching careers, are below the fixed sum. Consequently, only these teachers receive a "haard- en standplaatsvergoeding". Depending on the family situation, the value of the allowance ranges from 8 676 BEF to 17 353 BEF (January 1999).

No data were reported for Table D1.1d because there are too many different salary scales at this level.

Czech Republic: Starting salaries for primary and secondary teachers in the Czech Republic refer to teachers who have obtained a four-year *Magister* qualification.

Denmark: All data on salaries include both the teacher's own contribution to the pension fund and the employer's contribution (15 per cent).

England: England has a 17-point salary scale, the first nine points of which form the main salary scale. The next eight points are discretionary and may be regarded as "bonuses".

The starting salary for a teacher is taken to be the lowest point of the main 9-point salary scale for a teacher with a first university degree of class 2.2 or below.

The top point of the salary scale is taken to be point 9 of the main salary scale for a mainstream teacher with a first university degree of class 2.2 or below. About 23 per cent of all teachers are paid at point 9 on the strength of their qualifications and experience. Irrespective of starting salary, all teachers should have reached this point after 15 years.

These figures differ from those of the previous year because the top salary was then taken to be point 17, which is the highest point on the bonus scale, not on the main scale.

It is worth noting that according to table 15 of the School Teachers' Review Body Teachers' Pay Survey, September 1999, 46 per cent of full-time classroom teachers in all schools who were at point 9 on the strength of qualifications and experience also received extra payments for additional responsibility.

Finland: In Table D1.1d, all salaries were calculated using a new classification system.

Germany: In Germany, increments on the basic salary scale are dependent upon salary group and seniority grade. Salary grouping may vary between schools. Seniority largely depends on the age of the teacher upon becoming a civil servant and the length of training.

The number of years from minimum to maximum salary depends on age at the beginning of employment.

Greece: The salary of teachers at the top of the scale refers to the salaries of headteachers.

Hungary: In Hungary, the law on the salaries of public employees (The 33rd Law on Public Employees, 1992) lays down the minimum salary and the grades on the salary scale. Higher salaries can be given at a local or school level if the body maintaining the educational institution (in most cases the local municipality) allocates the sum required. Gross salary includes a 13th month and other regular additions.

Data on annual statutory teachers' salaries are computed according to the methodology used for data in 1996 and are directly comparable with that year. A comparable set of figures can be calculated for the year 1998 by multiplying the respective figures in *Education at a Glance* 2000 by 12/13.

Ireland: Bonuses are reported as negligible because additions to basic salary for extra responsibilities as a deputy principal or assistant principal, or for special duties, do not necessarily relate to the duties performed by a classroom teacher.

Korea: Starting salaries for primary and secondary teachers refer to the minimum starting salary for a newly qualified teacher at point 9 on the salary scale in 1999.

Mexico: Years from starting to top salary in Mexico could not be calculated because time is not the only criterion by which teachers may advance from minimum to maximum salary. However, there is a minimum formal requirement (but not a maximum) for the years that a full-time classroom teacher must work in order to progress from minimum to maximum salary.

Norway: There are five main groups of teachers (determined by educational qualifications), who receive minimum salaries at different points on the scale. The minimum salary at ISCED 1, 2 and 3 (vocational programmes) refers to the salary of a teacher with three years' training. It should be noted that the period of study at colleges of education was extended from three to four years in 1992, so that few teachers commence their careers with less than four years' training.

Portugal: Starting salaries are much higher than last year due to adjustments in the starting salary for teachers in the public education system.

Scotland: Primary and secondary teachers have a common 11-point salary scale, under which increments are awarded yearly. Salary increments are not dependent on training received.

Spain: Each Autonomous Community has a budget from which teachers' salaries in public institutions are paid. Salary scales must comply with the general guidelines for teachers' salaries in the National General Budget. The variations are, in many cases, quite substantial. Average teachers' salaries in Spain have been calculated as weighted means, reflecting the numbers of teachers in each Autonomous Community by level of education.

Private schools are affiliated to different unions, membership of which determines the salary scale – one union has a higher basic salary while the other has higher additions. In this case, the table with the higher net salaries has been used.

For ISCED 2, the final salary has been calculated as the mean of the salary of primary education teachers, who teach the first two years of lower secondary, and that of secondary teachers, who teach the last two years of lower secondary.

For ISCED 3, figures relate to technical teachers only as data are not available on the number of general secondary education teachers who also receive a slightly higher salary. At the vocational level, there are two categories of teachers (FP1 and FP2), which have different training requirements and different salary scales. Only FP1 teachers' salaries are shown in this table.

The following two bonuses are included in statutory salaries in Spain:

- Length of service: a *trienio* is a small salary supplement which is added after each period of three years' service. The amount varies according to level of education and type of institution.
- In-service training: a *sexenio* is a new salary supplement in public schools that is added after each period of six years' service. It is dependent on in-service training: teachers must complete 100 hours of in-service training during each period of six years in order to receive this supplement. Teachers generally meet this in-service requirement. For teachers with 15 years' experience, two *sexenios* may be awarded

Sweden: Since 1996, teachers in Sweden have been awarded individual salaries based upon collective agreements. All figures are therefore based on average salaries.

As statistics are not available according to years of service, figures for the salaries of teachers with 15 years' experience refer to the average salaries of teachers who are older than 45 years of age.

Breakdown by ISCED level is estimated.

Turkey: Vocational and technical teachers start their careers at the point on the salary scale for teachers with a three-year first degree.

United States: Increments on the salary scale are adjusted according to years of experience and educational qualifications.

Methodology

Belgium (Flemish Community): Salaries were calculated as the sum of index-linked gross salaries plus end-of-year allowance plus holiday allowance.

Italy: Since neither the number of teachers who obtain bonuses nor the amounts awarded are known (amounts can range from 0 to an additional 15 to 80 per cent of the annual gross salary), an average value per capita has been estimated.

Switzerland: Teachers' salaries are weighted means of salaries in the different cantons.

Sources

■ **Tables D1.1a-d.**

Australia:

Source: State and Territory Education Departments 1999: New South Wales Department of Education and Training; Victorian Department of Education, Employment and Training: Teaching Service Order 154 and Teaching Service (Employment Conditions, Salaries, Allowances and Selection) Order 1996; Education Queensland: Queensland State Teachers' Award; Education Department of Western Australia: Education Act 1928; Schedule B Teachers (Public Sector Primary and Secondary Education) Award; Appendix 1 of the Remote Teaching Service Individual Workplace Agreement; Government School Teachers' Certified Agreement (1998); South Australia: Teachers' DETE (Department of Education, Training and Employment) Award; Curriculum Guarantee Agreement, included in the Enterprise Bargaining Agreement registered with the Industrial Commission; Department of Education, Tasmania: Legal award; Northern Territory Department of Education; Australian Capital Territory Department of Education and Community Services.

Nature of source: Law or policy document based on law (data on formal arrangements) and national survey (data on samples).

School year: 1999.

Comments: National survey data include employed teachers, but exclude school management personnel and teachers without active teaching responsibilities. Data do not include people excluded from the Labour Force Survey (*i.e.*, permanent defence force personnel, certain diplomatic personnel, overseas residents in Australia, members of non-Australian defence forces stationed in Australia, and Jervis Bay Territory residents); 80 000 persons living in remote areas of Australia; various other groups not in the labour force (*i.e.*, students at boarding schools, patients in hospitals, residents of homes (*e.g.*, retired and disabled persons), and prison inmates); employees refusing to answer questions about their earnings; and a few groups of employees not involved in teaching. The figures quoted are based on people 15 years of age and over only.

Austria:

Source: Employment and salary legislation relating to teachers (Beamten-Dienstrechtsgesetz; Landeslehrer-Dienstrechtsgesetz; Gehaltsgesetz).

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: All teachers are employed by the Federation (Bund) or the Länder. Teachers working in primary and secondary education are employed by the Länder.

Belgium (Flemish Community):

Source: Department of Education (Flemish Community), Budget and Data Management Division.

Nature of source: Law or policy document based on law (data on formal arrangements).

Comments: The law concerns all teachers employed in schools subsidised and/or financed by the Flemish Community

Belgium (French Community):

School year: 1998-January 1999.

Czech Republic:

Source: Government decree (applies to teachers of public schools) and statistics (all teachers are included).

Nature of source: Law or policy document based on law.

School year: 1998-1999.

Denmark:

Nature of source: Law or policy document based on law (data on formal arrangements).

Finland:

Nature of source: Law or policy document based on law (data on formal arrangements) and national statistics (data on populations).

School year: 1999.

Comments: Data on populations: ISCED 1 and 2: 100 per cent; ISCED 3 general: 100 per cent; ISCED 3 vocational: about 55 per cent.

France:

Source: Salary regulations (Textes réglementaires relatifs aux carrières et rémunérations des enseignants).

Nature of source: Law or policy document based on law (data on formal arrangements) and national statistics (data on populations).

School year: 1998-1999.

Germany:

Nature of source: Law or policy document based on law (data on formal arrangements) and national statistics (data on populations).

School year: 1998-1999.

Greece:

Source: Ministry of National Education and Religious Affairs.

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: This legislation has been in force since 1.1.1997, under the terms of salary reform law No. 2470/1997.

Hungary:

Source: Data on individual salaries and payments, May 1999. National Centre of Labour and Methodology, Ministry of Social and Family Issues; Act of Public Employees, 1992.

Comments: The size of the sample is 100 per cent in the case of institutions maintained by local governments, and 9 per cent in the case of institutions maintained by central agencies and of private educational institutions. Since the majority of educational institutions belong to local governments, the sample is close to 100 per cent in the public sector. In the government-dependent sector, the small size of the sample may affect the reliability of the data.

Iceland:

Source: ISCED 0: salary agreement between the Icelandic Association of Pre-School Teachers and the National Association of Local Authorities in Iceland 1997-2000; ISCED 1 and 2: salary agreement between the Teachers' Trade Union of Iceland and the National Association of Local Authorities in Iceland 1998-2000; ISCED 3: salary agreement between the Icelandic Teachers' Trade Union and the State 1997-2000.

School year: 1999.

Comments: For ISCED 0, 1 and 2, figures are based on payroll registers in Reykjavik only. Data from other municipalities were not available for 1999.

Ireland:

Nature of source: Law or policy document based on law (data on formal arrangements).

Italy:

Source: CCNL Comparto scuola and CCNL Integrativo.

Nature of source: Law or policy document based on law (data on formal arrangements) and national statistics (data on populations).

Korea:

Source: The presidential decree on salaries and allowances for public servants and the national budget.

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1999.

Comments: Teachers' salaries are similar throughout education, regardless of whether a school is public, private or national.

Mexico:

Source: National Teachers' Union (Sindicato Nacional de Trabajadores de la Educación, SNTE): Basic Education Salary Negotiation 1998: Response to an Overall Claim (Negociación Salarial de Educación Básica 1998: Respuesta a una Demanda Integral), published by Talleres Gráficos de la Editorial del Magisterio Benito Juárez. Mexico, D.F., May 1998; Ministry of Education (Secretaría de Educación Pública, SEP): Report of Activities 1997-1998 (Informe de Labores 1997-1998), Mexico, D.F., September 1998; and Ministry of Education: Profile of Education in Mexico, Mexico, D.F., 2nd revised edition, 1999.

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: These three data sources contain the formal arrangements between the Ministry of Education in Mexico (SEP) and the teachers' union (SNTE), regarding the statutory salaries paid to all teachers working at ISCED 0, 1 and 2.

Netherlands:

Source: Financiële Arbeidsvoorwaarden Sector Onderwijs en Wetenschappen + CASO system.

Nature of source: Law or policy document based on law (data on formal arrangements) and salary administration.

School year: 1999.

New Zealand:

Source: Primary, Secondary and Area Schools Teachers' Employment Contracts and 1999 Payroll Information.

Nature of source: Law or policy document based on law (data on formal arrangements), national statistics (data on populations) and payroll data.

School year: 1998-1999.

Norway:

Source: Agreements between the Ministry of Education and the Teachers' Unions on working conditions and wage statistics.

Nature of source: Law or policy document based on law (data on formal arrangements), national statistics (data on populations).

School year: 1998.

Portugal:

Source: Statute of the Teaching Career; Education Finance Department; collective work contract for private school employees.

School year: 1998-1999.

Scotland:

Source: Scheme of Salaries and Conditions of Service for Teachers.

Spain:

Source: Ministry of Finance Resolution of 4 January 1999 on salaries for civil servants (BOE. 5-1-99); Salary revision of the 3rd National Collective Employment Agreement for government-dependent private schools; 6th National Collective Labour Agreement for private government independent schools (BOE 25-8-99) (both backdated to 1.1.99); reports on teachers' salaries from the Autonomous Communities.

School year: 1999.

Sweden:

Source: Statistics on salaries for civil servants; population study on salaries disbursed during October 1998.

Nature of source: National statistics (data on populations).

School year: 1998-1999.

Switzerland:

Source: Teachers 1998/99 (Lehrkräfte 1998/99), Federal Statistical Office (Bundesamt für Statistik) and Swiss Teachers' Association (Dachverband Schweizer Lehrerinnen und Lehrer, LCH).

Nature of source: Law or policy document based on law and national statistics (data on populations).

School year: 1998-1999.

Turkey:

Source: Ministry of National Education: Fundamental Principles Related to Salaried Teaching Hours of Teachers and Administrators, 1986 to 1998; Law No. 657 on social benefits, 1965; location allowance specified by the Council of Ministers each year.

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

United States:

Source: Schools and Staffing Surveys (SASS).

Nature of source: National survey (data on samples).

School year: 1993 to 1994.

Comments: The data for the indicator are not based on the country's formal education policy, but are generated from a national survey of local school districts, schools and teachers from a stratified cluster sample of 65 000 teachers completed in 1993-1994. The next data collection will be in 1999-2000.

Coverage

■ **Table D1.3.**

Australia: Adjustments to base salary vary among the different States and Territories.

Adjustments to base salary are frequently given in all or most States for:

- Educational qualifications higher than the minimum. This applies at entry level only, so that teachers with a certain level of qualification may enter teaching at a salary one step higher than the minimum starting salary. They therefore reach the top of the scale one year before their peers.
- "Special tasks" such as supervising student teachers from universities. This allowance may be funded by the university and is available in several States.
- Family status. An allowance for teachers with dependants is paid to teachers in two States;
- Location allowance, which is a remote and country area incentive scheme. Location is divided into categories of isolation, the most remote schools attracting the highest allowance. The location allowance has single and dependent rates – adults and children dependent on the teacher increase the amount of the allowance.
- Teaching students with special educational needs. Each State or Territory which offers this allowance defines the circumstances under which is it paid.
- Outstanding performance in teaching, of which there may be several levels up to a maximum amount payable. In some States, this allowance simply accelerates advancement through the incremental salary scale; and
- Management responsibilities such as co-ordinating subjects or faculty areas, being a "key teacher" or co-ordinating certain centres of education. These additions may be temporary or permanent in nature, depending on the State/Territory and/or the position of the teacher, and sometimes on the discretion of the headteacher. This allowance may be coupled with a reduced teaching load.

Adjustments to base salary are occasionally given for:

- "Special activities" such as co-ordinating sports carnivals and extra-curricular activities.
- Holding a higher level of teaching certification or training than the minimum; and
- Successful completion of professional development.

Adjustments to base salary are rarely given for:

- Age.
- Teaching courses in a particular field.
- Holding educational qualifications in more than one subject; and
- Teaching more classes or hours than are required under a full-time contract.

Austria: Adjustments to base salary are given for:

- School management responsibilities, in addition to teaching duties.
- Teaching students with special educational needs.
- Teaching more hours than are required under a full-time contract (overtime pay).
- Special tasks.
- Family status.
- Teaching children who have little command of German ("Other"); and
- Outstanding performance in teaching.

Adjustments to base salary are most frequently awarded on the basis of points 1-6.

Belgium (Flemish Community): Adjustments to base salary are given for:

- Holding a level of teaching certification or training higher than the minimum. Management and teaching staff must hold a specific certificate of competence in a subject area and be teaching in that subject area; and
- Teaching students in special education schools. Staff working in special education must hold a special diploma or certificate and may be employed in special education as "management and teaching staff", "assistant educational staff'", "paramedical staff", "social staff", "psychological staff" or "medical staff". This additional allowance may be awarded in conjunction with the first allowance.

Belgium (French Community): Adjustments to base salary are given for:

Teaching students in special education schools. Teachers must have an additional diploma to teach special education.

Czech Republic: Adjustments to base salary are given for:

- Educational qualifications higher than the minimum
- School management responsibilities in addition to teaching duties
- Outstanding performance in teaching.
- Teaching students with special educational needs.
- Teaching more hours than are required under a full-time contract (overtime pay)
- "Special tasks and activities".
- Family status.
- Age.
- "Other".
- Successful completion of professional development activities; and
- Holding a higher than average educational qualification or certification.

Additions to basic salary are most frequently awarded on the basis of points 1-9.

Denmark: Additional bonues are given for:

- School management responsibilities in addition to teaching duties, for which teaching hours are reduced and extra pay is occasionally given.
- "Special tasks" – educational guidance counselling in addition to teaching duties, for which teaching hours are reduced and extra pay is occasionally given.
- Teaching more hours or classes than are required under a full-time contract. Such overtime compensation is part of the collective agreement between the teachers' unions and the employer.
- "Special activities" – pedagogical development work in class, for which teaching hours are reduced and extra pay is occasionally given; and
- Participating in study circles with colleagues.

Note that teaching hours are reduced if a teacher has co-ordinating responsibilities as a class teacher, supervises equipment in laboratories or is over 60 years of age.

Criteria for adjustments to base salary are in descending order of the frequency with which they are applied.

England: England has a 17-point salary scale, the final eight points of which are discretionary and may be regarded as "bonuses". Note that there are no bonuses for higher degrees, and that because the scale does not rise evenly, it is not possible to indicate accurately the value of each additional point. According to the 1998 Document and Circular, incremental points are given to teachers for:

- Undertaking specific responsibilities beyond those common to the majority of classroom teachers (48 per cent of teachers).
- Teaching in inner, outer or fringe London, for which one incremental point is available (19 per cent of teachers).
- Teaching students with special needs in regular or special classes, for which teachers may receive up to two incremental points (5 per cent of teachers).
- Recruitment and retention of new teachers (2 per cent of teachers) at the primary and pre-primary level or to address shortages in certain subjects or geographical areas, for which schools have the discretion to award up to two additional incremental points (three points are given for teachers in Inner London) ("Other").
- Excellence in teaching performance (awarded to very few teachers), for which up to three points may be awarded.
- Professional development – in-service teacher training (INSET) for full-time teachers (not headteachers, deputy heads or advanced skill teachers) undertaken at weekends or during school holidays (*i.e.*, out of school hours).
- "Special tasks" – initial teacher training activities (ITT) for headteachers, deputy heads or advanced skill teachers who perform such activities as observing and supervising teaching practice, running seminars and tutorials, and formally assessing students' competencies. ITT is funded by schools and higher education institutions; and
- "Special activities"- payment for out-of-school-hours learning activities run by headteachers, deputy heads or advanced skill teachers, such as breakfast clubs, homework clubs, summer schools or outdoor activities.

Adjustments to basic salary are most frequently awarded on the basis of points 1 and 2.

Finland: Adjustments to base salary are most frequently awarded to teachers for:

- Higher educational and qualifications and teaching certification.
- Management responsibilities in addition to teaching duties.
- Teaching students with special educational needs.
- Teaching more hours or classes than are required under a full-time contract.
- Teaching in high-cost or deprived areas.
- Age; and
- "Special activities".

Adjustments to base salary are least frequently awarded to teachers for:

- Educational qualifications in more than one subject.
- Completion of professional development activities.
- Outstanding performance in teaching.
- Teaching courses in a particular field; and
- Family status.

France: Adjustments to base salary are given for:

- Management responsibilities in addition to teaching duties, in pre-primary and primary education.
- Teaching students with disabilities.
- Teaching more hours or classes than are required under a full-time contract in secondary education.
- "Special tasks" – training student teachers.
- Working in an educational priority area (*zone d'éducation prioritaire*, ZEP).
- Family status: teachers who have one or more children; and
- "Special activities" – teaching in clubs, with the approval of school principal. This bonus is only awarded to teachers occasionally.

Germany: Adjustments to base salary are given for:

- Family status, dependent upon the salary group and the family circumstances of the teacher (*e.g.*, married and widowed teachers without children are paid at Level 1, while married and widowed teachers with children fall under Level 2.). This allowance is frequently awarded to teachers; and
- Teaching more hours than are required under a full-time contract (overtime pay).

Note that teaching hours are reduced if teachers undertake additional administrative duties (headteachers and principals only), train student teachers, prepare timetables or manage the school library.

Greece: Additional bare frequently given for:

- Higher qualifications such as a Master's degree or PhD.
- Teaching more hours or classes than are required under a full-time contract (overtime pay).
- "Special tasks" – training student teachers. The amount awarded depends on the subject and training time.
- Teaching in "problematic and/or border regions".
- Teaching in a "disadvantaged" or high-cost areas; and
- Family status: teachers who are married and/or have 1, 2, 3, 4 or over 5 children.

Note that teaching hours are reduced over time. The remaining hours of working time must be spent within the school. For new teachers, teaching time is 21 hours per week; after six years, teaching time is reduced to 19 hours per week; after 12 years teaching time is 18 hours per week; and finally after 20 years teaching time is 16 hours per week.

Criteria for adjustments to basic salary are in descending order of the frequency with which they are applied.

Hungary: The monthly average of bonuses, calculated on the basis of individual data for May 1999, is the average sum of merit pay, which was introduced from 1 September 1998. Additions to basic salary may be given to teachers for:

- Teaching more hours or classes than are required under a full-time contract (overtime pay).
- Higher educational qualifications than those specified in the Public Education Act.
- Management responsibilities, such as being acting principal, acting headteacher or a form teacher, helping with student self-government, etc..
- Outstanding performance in teaching.
- Teaching students with disabilities or students from ethnic minorities.
- Teaching in areas of higher than average unemployment.
- "Special tasks" such as training student teachers.
- "Special activities" such as supervising and organising study circles outside compulsory teaching hours (overtime), coaching, organising clubs, etc.
- Professional development activities: completion of in-service training, which is compulsory for teachers once every seven years. Teachers who meet this requirement advance one step on the salary scale one year earlier than usual (*i.e.*, in two years rather than three).
- Holding qualifications in more than one subject, provided that these qualifications are used in educational practice; and
- Teaching in a particular field, such as ICT.

Other discretionary additions may be given for teachers in boarding houses and teachers of merged classes, depending on local financial availability.

Note that teaching hours are also reduced if teachers undertake additional administrative duties (headteachers and principals only) or have management responsibilities (*e.g.*, contact classes).

Iceland: Adjustments to base salary are frequently given for:

- Management responsibilities in addition to teaching duties.
- Teaching courses in a particular field.
- Teaching students with special educational needs.
- Teaching more hours or classes than are required under a full-time contract (overtime pay).
- "Special tasks" – training student teachers; and
- Age.
- Adjustments to base salary are occasionally given for:
- "Special activities' – social activities with pupils; and
- Location allowance.

Ireland: Adjustments to base salary are given for:

- Additional responsibilities as a deputy principal or assistant principal, or for special duties.
- Higher qualifications and teaching certification such as higher degrees, diplomas and Honours qualifications.
- Teaching in remote areas (*e.g.*, Island Allowance) and in Irish-speaking schools (Gaeltacht); and
- Length of service (10 years at the top of the salary scale) ("Other").

Italy: Teaching staff in Italy may receive temporary adjustments to their basic salaries, the funds for which are provided by the Ministry. Generally, bonuses are paid to teachers participating in projects that improve the educational provision of a school. This extra payment does not depend on teachers' length of service but is based on their voluntary participation in additional activities such as:

- Teaching more hours or classes than are required under a full-time contract: substitute teaching of no more than six hours per week in addition to contractual teaching hours.
- Successful completion of professional development activities and involvement in special committees.
- Management responsibilities, including supporting the headteacher in planning the staff assembly (*collegio docenti*), which allocates funds from the school budget.
- "Special tasks" – teachers may be requested to give presentations or lectures, or to lead groups in professional development initiatives.
- "Special activities" – extra-curricular activities planned by students and supervised by teachers. Other teachers are remunerated for combating student drop-out, particularly in areas at risk; and
- Family status.

Netherlands: Teachers are given bonuses for:

- Teaching students with disabilities in pre-primary and primary education.

New Zealand: Teachers may be entitled to additional payments under their collective employment contract in a variety of circumstances. In addition, individual school boards determine additional payments for management responsibility, recruitment, reward and retention purposes within an allocation available to them.

Norway: Adjustments to base salary are given for:

- Higher educational qualifications, for which teachers may gain one or more increments.
- Management responsibilities, for which teachers may gain one or more increments and have reduced teaching hours.
- Teaching more hours or classes than are required under a full-time contract (overtime pay); these are paid at an hourly rate.
- Responsibilities as a class teacher, for which teachers may gain one or more increments and have reduced teaching hours ("Other"); and
- Location allowance, whereby teachers – particularly in Northern Norway – receive a fixed amount in addition to their salary.

Point 5 is the least frequently awarded adjustment to basic salary. Note that teachers who are training student teachers do not receive adjustments in basic salary, but are given a reduction in teaching hours.

Portugal: Teaching hours are reduced over time. Teachers over 40 years of age with ten years' service are given a reduction of two teaching hours per week every five years, up to a maximum of eight teaching hours per week. Adjustments to base salary are given for:

- Teaching more hours or classes than are required under a full-time contract (overtime pay), which is often caused by differences in individual teaching loads and allocation of curriculum time.
- Additional educational qualifications, such as a Master's degree (equivalent to four years of career progression) or a PhD (equivalent to six years of career progression).
- "Special tasks" – training student teachers. Teachers receive an increase in salary and a reduction in teaching hours for the duration of the traineeship.
- Management responsibilities, for which teachers may gain salary increments (*e.g.* principals) and have reduced teaching hours (*e.g.* heads of departments and class co-ordinators).
- Outstanding performance in teaching, whereby teachers may apply after 15 years' service for a special appraisal of their CVs and receive an increase equivalent to two years of career progression; and
- Teaching students with special needs, for which special certification is required.

Note that a social allowance is given to every family and thus is not restricted to teachers. Point 5 is the least frequently applied criterion for the award of an adjustment to basic salary.

Scotland: Adjustments to base salary are occasionally given for:

- Location allowance: under the Scheme of Salaries and Conditions of Service document for teachers employed in education authority schools, teachers in "remote schools" and "distant islands" (*i.e.*, the Orkneys, Shetlands or Outer Hebrides, and the islands of Colonsay, Tiree, Coll, Muck, Eigg, Rhum, Canna and Soay) are awarded additional remuneration. These allowances are updated from 1 April and 1 October (respectively) in each year on the basis of movement in the Average Earnings Index.
- Additional educational qualifications: entry to the teaching profession in Scotland is open to graduates only. Local education authorities as employers are responsible for carrying out a salary review prior to placement on the common scale. This review takes into account age, qualifications and relevant experience, and determines at which point on the scale a teacher should be placed. Any teacher who possesses qualifications above the minimum entry requirements, such as an Honours degree, is automatically placed on the entry point for Honours graduates within the common scale. This would, however, be the only occasion when a teacher's salary is increased beyond the basic salary level to reflect additional qualifications; and
- Additional management responsibilities: teaching staff who assume management responsibilities would normally do so through promotion. This would then place the individual on a different salary scale within the promoted post structure.

Spain: Adjustments to base salary are given for:

- Management responsibilities, such as occupying the position of head of department (*catedrático*) in general secondary education. This is a qualification gained through in-service training since 1990 (15 per cent of total teachers). Heads of department must be nominated by the school principal and the highest local educational authority. Department heads have a reduction in teaching hours in addition to a salary supplement.
- Location allowance.
- Teaching in rural schools in public education.
- Teaching in disadvantaged areas in public education (*e.g.*, teaching gypsies or migrants); and
- Teaching in public and private schools in the Canary Islands, Balearic Islands and Spanish cities in North Africa (Ceuta and Melilla); and
- Family status: teachers who are married and have children, but this is only given to teachers in the Autonomous Community of Navarra (1.4 per cent of teachers).

Adjustments to basic salary are most frequently awarded on the basis of point 1.

Sweden: While bonuses are rare and difficult to isolate because of the individual setting of salaries, bonuses are given to teachers for:

- Management responsibilities in addition to teaching duties.
- Teaching more hours or classes than are required under a full-time contract (overtime pay); and
- "Special activities" such as organising a drama group.
- Other bonuses, which are awarded to teachers less frequently, act as significant criteria for the setting of individual salaries.
- Additional educational qualifications and teaching certification.
- Professional development activities.
- Outstanding performance in teaching.
- Teaching more than one subject.
- Teaching courses in a particular field.
- Teaching students with special educational needs.
- Special tasks; and
- Teaching in a remote rural or disadvantaged area.

Switzerland: The allocation of bonuses to teachers is a matter for the individual cantons. Point 1, which is the most frequent criterion for the award of an addition to basic salary, is the only bonus that applies in ALL cantons. Additions to basic salary may be given for:

- Family status.
- Management responsibilities in addition to teaching duties.
- "Special tasks".
- "Special activities"; and
- Teaching more hours or classes than are required under a full-time contract (overtime pay).

Turkey: Adjustments to base salary are given for:

- Family status: teachers who have two children below 18 years of age and/or an unemployed spouse.
- Teaching more hours or classes than are required under a full-time contract (overtime pay); these are paid by the hour.
- Providing individual services to students: in 6th grade of primary and 8th grade of secondary education, three additional teaching hours are paid if teachers participate in out-of-school or socio-educational activities or in psychological consultation and guidance activities ("Other").
- Additional educational qualifications, such as a Master's degree or a PhD, which give the equivalent of one year's career progression. In addition, in the case of "overtime", an additional 25 per cent of the hourly salary is given to teachers with a Master's degree and an additional 40 per cent of hourly salary is given to those with a PhD, on top of the basic hourly rate for teachers with minimum qualifications.
- "Special tasks", *i.e.* supervising student teachers, which is paid on an hourly rate; and
- Teaching in priority areas such as remote areas, high-cost areas or disadvantaged areas.

United States: In addition to the basic salary, which is defined by educational qualifications and experience, additions to basic salary are given to all teachers for:

- Higher educational qualifications.
- "Special activities".
- Management responsibilities in addition to teaching duties; and
- Higher certification or training.

INDICATOR D2: Age and gender distribution of teachers, and staff employed in education

Notes on specific countries

Coverage

Tables D2.1, D2.2 and D2.3.

Austria: The age distribution is partly based on interpolation and estimates. The number of teachers is slightly underestimated because school management staff are not counted *pro rata* as teachers even though they may spend some time teaching.

Canada: Tertiary-type B education *includes* teachers in post-secondary non-tertiary education (ISCED 4).

Belgium (Flemish Community): Upper secondary education *includes* teachers in lower secondary education and teachers in post-secondary non-tertiary education (ISCED 4).

In the case of personnel working in "hogescholenonderwijs" it is not possible to make a distinction between type A and type B programmes. However, all "hogescholenonderwijs" personnel are included in the total for higher education.

Finland: Upper secondary education *includes* teachers in all vocational and technical programmes. Teachers at post-secondary non-tertiary and tertiary-type B levels (ISCED 4 and 5B), and teachers in vocational programmes at tertiary-type A level (ISCED 5A), are included in upper secondary education.

Germany: As data on the work-based element of combined school and work-based programmes are not available, the number of students in combined school and work-based programmes is converted using a factor of 0.4 in the calculation of the ratio of students to teaching staff. (Table D5.1).

Iceland: Lower secondary education *includes* teachers in primary education, while upper secondary education *includes* teachers in post-secondary non-tertiary education. Music schools are excluded from ISCED 5B.

Ireland: Programmes at lower secondary, upper secondary and post-secondary non-tertiary levels (ISCED 2, 3 and 4) are generally provided in the same institutions (*i.e.*, secondary schools) and are taught by personnel who teach at more than one level and in many cases at all three levels. It is therefore not feasible to provide a breakdown for teachers by ISCED level. Thus, the distribution of teachers by age group in lower secondary education *includes* teachers in upper secondary and post-secondary non-tertiary education.

Italy: Teaching staff *excludes* teachers working in regional vocational education (Formazione professionale regionale) and those in tertiary type-B private institutions.

Luxembourg: Lower secondary education *includes* teachers in upper secondary education.

Netherlands: Primary education *includes* teachers in pre-primary education. Upper secondary education *includes* teachers in lower secondary education.

Norway: In Tables D2.1 to D2.3, lower secondary education *includes* teachers in primary education while upper secondary education *includes* teachers in post-secondary non-tertiary education. In Table D5.1, upper secondary education *includes* teachers in post-secondary non-tertiary education.

Spain: Upper secondary education *includes* teachers in lower secondary and post-secondary non-tertiary education.

Sweden: The number of teachers in post-secondary non-tertiary education has been estimated.

United Kingdom: In Tables D2.1 and D2.3, upper secondary figures refer to upper secondary general education only. No data are available on the age distribution of upper secondary vocational (further education) teachers.

Tables D2.4 and D2.5.

Austria: Headteachers are included in teaching time and time components of other teachers reserved for professional or administrative tasks.

Belgium (Flemish Community): The figures under the heading "school-level management" in upper secondary education are slightly underestimated because it is not possible to differentiate between teaching and management staff.

In contrast to practice in previous years, figures for apprenticeship training courses run by VIZO, staff working in the university-level training of the Royal Military Academy, entrepreneurial training courses run by VIZO and part-time arts education have not been included.

Maintenance and operations personnel *only covers* personnel working in public education in the Flemish Community. These people are paid by the Education Department. This means that the other two Flemish education networks (one of which is the biggest network) *are not included* in this category. This results in considerable underestimation of the true situation.

Data on personnel working for the Flemish Inter-University Council have not been included in the category "higher level management and higher level administrative personnel".

Canada: Data for tertiary education (ISCED 5A, 5B and 6) *are missing except* for three categories of staff employed in education (teachers, academic support staff and school-level management personnel).

The figures under the heading "teaching aides and teaching/research assistants" *include* only teaching aides (ISCED 0-3).

Finland: The data *include* teachers in educational institutions in the regular education system and *exclude* music schools and colleges, sports institutes, folk high schools, military vocational institutes, summer universities and study centres.

Part-time means permanent positions or duties where the hours worked are fewer than those of full-time teachers. Teachers teaching only a few hours per week with no permanent position *are not included* in these figures.

Iceland: Teaching staff *includes* teaching aides and teaching/research assistants.

Ireland: Teaching staff at the tertiary level *includes* teaching/research assistants.

Italy: The number of teachers as a percentage of the labour force is *slightly underestimated* because some teachers working in programmes such as regional vocational education (Formazione professionale regionale) *are not included* in teaching staff.

Korea: Teaching aides and teaching/research assistants *includes only* teaching/research assistants (ISCED 5A/5B/6).

Sweden: Teaching aides and teaching/research assistants *includes only* teaching aides in pre-primary schools (ISCED 0). Personnel employed in school-level management *does not include* tertiary education (ISCED 5A/5B/6).

Switzerland: Data are *only available* for tertiary-type A and advanced research programmes (ISCED 5A/6) for three categories of staff employed in education (teaching/research assistants, health and social support for students and school-level management personnel).

Turkey: The category teaching aides and teaching/research assistants *includes only* teaching/research assistants (ISCED 5A/5B/6).

INDICATOR D3: Teaching time and teachers' working time

Notes on specific countries

Table D3.1 and D3.2.

Coverage

Australia: Results for Table D3.2 1A were calculated using only the States that responded in the affirmative to Table D3.2 1B.

Belgium (Flemish Community): There are three different programmes for ISCED 3 pre-vocational/vocational: technical, arts and vocational education.

Mexico: Data are missing for ISCED 3 as there are a variety of teaching/working times per week at this level.

Switzerland: Teaching time related to preparing students for university entrance and to teaching students in *Langzeitgymnasien* (ISCED 2) are reported under ISCED 3 general programmes. Health and agriculture are not included in ISCED 3 vocational programmes.

Interpretation

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

Belgium (Flemish Community): The government defines the minimum and maximum number of teaching periods (of 50 minutes each) per week at each ISCED level. The additional non-teaching hours within the school are set at the local or school level. The balance between the minimum and maximum number of teaching hours is called *plage-uren*, and can be used for teaching, staff meetings, class councils, etc. Playground surveillance does not come under *plage-uren* but it does belong to non-teaching hours within the school.

Belgium (French Community): The data on teaching time refer to the maximum numbers of lessons of 50 minutes each: 28 lessons at ISCED 0 and ISCED 1, 24 lessons at ISCED 2, 22 lessons at ISCED 3 (general subjects) and 33 lessons (vocational/practical training). Teachers' workload at ISCED 3 vocational is estimated on the basis of teachers of vocational subjects.

Denmark: Within the formal demands of 37 working hours per week at ISCED 1 and 2, for every hour of teaching one hour of preparation time and an average of 30 minutes of non-teaching time was calculated in the reference year. At ISCED 3 (general programmes), a collective agreement between the county authorities and the teachers' union defines lesson preparation time as 75 per cent of the number of lessons * 1.33 hours, and the hours to be used for examinations as an average of 110 hours per annum. Remaining duties are defined at the local level. At ISCED 3 (vocational programmes), agreement has to be reached between the management of the school and the teachers' representative on the principles for allocation of working hours for preparation, etc. in accordance with the collective agreement between the teachers' union and the Ministry of Finance. The limits for preparation time are between 13 and 126 minutes per 60 minutes of teaching. Norms for correction of written work, examination work, etc., are regulated by the collective agreement or by local agreement within the school. As a minimum, each teacher is allowed 50 hours per year for pedagogical, theoretical and skills development.

France: Of the 27 working hours for teachers at ISCED 0 and 1, one hour per week is spent liaising with other teachers and co-ordinating teaching. At ISCED 2 and 3, the amount of working time varies according to the subject taught. Non-teaching time at ISCED 2 and 3 is calculated as 60 minutes for every net hour of teaching.

Germany: The number of periods that teachers are required to teach varies from school to school and *Land* to *Land*. Teaching time also differs according to teaching qualifications and subjects. The weighted average number of lessons per week (of 45 minutes each) is 27.76 at ISCED 1, 26 at ISCED 2, 24.8 at ISCED 3 (general programmes), and 24.65 at ISCED 3 (vocational and pre-vocational programmes).

Greece: The maximum mandatory number of lessons taught per week is 25 (of 48 minutes each) at ISCED 0 and 1, and 21 lessons at ISCED 2 and ISCED 3.

Hungary: The mandatory number of working hours (40 hours) conforms to that of public employees and is a formal requirement for teachers. Most preparation takes place outside school. School-related activities (*e.g.*, staff meetings, meetings with parents, preparation for school festivities, etc.) are specified at the school level. Teachers are required to teach 32 lessons per week (of 60 minutes each) at ISCED 0, 21 lessons (of 45 minutes each) at ISCED 1, and 20 lessons (also 45 minutes) at ISCED 2 and ISCED 3 in order to earn a full-time salary. Overtime teaching is paid and is often required as part of the job.

Iceland: Pre-school teachers (ISCED 0) work 40 hours per week, four hours of which are allocated for preparation, planning, meeting parents, preparing field trips, staff meetings, etc. At ISCED 1, 2 and 3, the total annual workload is 1 800 hours over 181 days, of which 170 days are teaching days. A full-time teacher under age 55 is required to teach 28 lessons per week at ISCED 1 and 2 and up to 24 lessons per week at ISCED 3. This teaching load is reduced with age and experience and can be as low as 19 lessons per week at ISCED 1 and 2, and 17 lessons per week at ISCED 3 for a 60-year-old teacher with at least 10 years' service. A teacher's workload at ISCED 1 and 2 is divided into three categories: teaching (K), preparing lessons (U), and other work (Ö). If other work is increased for a particular teacher, the teacher can either choose to do less teaching or to receive overtime pay, and in the case of a part-time teacher, is entitled to a higher percentage of a full-time job. At ISCED 3, the teacher's workload is divided into five categories: work at school under the supervision of the headteacher (130 hours), teaching and teaching-related work (1 177 hours), work during the six examination weeks (258 hours), preparation and follow-up at the beginning and end of the school year (32 hours), and professional development.

Mexico: At ISCED 0, 1 and 2, teaching time comprises 12.5 hours, 20 hours and 20.8 hours, respectively, per week. The remaining working hours must be devoted to non-teaching activities, such as meetings, general school tasks, examination marking and lesson preparation, whether inside or outside school.

Netherlands: Ten per cent of the total annual required working hours are available for professional development. At ISCED 0 and 1, the total number of annual working hours is 1 659, of which 930 are teaching hours. At ISCED 2 and 3 (general programmes), in addition to 868 teaching hours per year (26 lessons of 50 minutes per week), 173 hours per year are allowed for preparation, 166 hours for professional development, and 452 hours for other tasks. At ISCED 3 (vocational programmes), teachers' annual working hours are 1 710, 843 hours being allocated for teaching and student guidance and 171 hours for professional development.

Norway: Teachers are required to work 1 717.5 hours per annum over 39 weeks, of which 38 are teaching weeks. At ISCED 1, 2, 3 (general programmes) and 3 (vocational programmes), out of the 44 hours of working time per week, 18.8 hours, 16.7 hours, 13.3 hours and 15.5 hours per week, respectively, are devoted to teaching. The remaining working time and the 39th week are devoted to non-teaching activities.

As all other civil servants work approximately 46 weeks per year and 37.5 hours per week while teachers work 39 weeks per year, the high number of working hours per week for teachers can be accounted for by a compressed working year.

Portugal: Teachers at all educational levels are required to work 35 hours per week over 43 weeks, of which 36 weeks are teaching weeks. Maximum teaching time amounts to 25 hours at ISCED 0 and 1, and to 22 lessons and 20 lessons (of 50 minutes each) per week at ISCED 2 and 3, respectively.

Scotland: The working hours of teachers include 27.5 hours per week in school, of which the maximum class contact time is 25 hours at ISCED 1, and 23.5 hours at ISCED 2 and 3.

Spain: At ISCED 0 and 1, teachers are required to work for 37.5 hours per week, of which 22.5 hours comprise net contact time, and 7.5 additional hours are to be devoted to activities at school (breaks, meetings and pedagogical activities). The remaining 7.5 hours may be spent out of school in preparation for classes, professional development, etc. At ISCED 2 and 3, teachers are required to teach 18 lessons (of 55 minutes each) per week (up to 21 lessons in exceptional cases). Teachers must teach a minimum of two and a maximum of five lessons per day, and are expected to be available at school for 30 hours (25 hours teaching classes plus other pedagogical activities). All teachers are required to spend at least four hours per day in school.

Sweden: Working time is regulated in formal agreements between the Swedish Association of Local Authorities and teachers' unions. Teaching time in hours is not regulated in order to allow for the teaching of non-compulsory subjects.

Turkey: Teaching time is laid down at the national level, while non-teaching time is specified at the school level. The only formal requirement states that teachers shall attend workshops and prepare for the school year for 40 hours preceding and 40 hours following each school year. Teaching time per week is 18 lessons (of 50 minutes each) at ISCED 0, 18 lessons (of 40 minutes) at ISCED 1 and 2, 15 lessons at ISCED 3 (general) and 20 lessons per week in vocational/pre-vocational programmes (also 40 minutes each). Twelve compulsory but additionally paid classes are required at ISCED 0 and 1, six classes at ISCED 2 and 3, and 20 classes at ISCED 3.

United States: Teaching time and working time include the amount of time for which teachers are required to be at school but do not include the work completed outside the school setting. For children in full-day kindergarten (ISCED 0), the hours of teaching would be similar to the teaching time in primary education (ISCED 1). However, while some schools offer full-time kindergarten, others only offer part-time kindergarten.

Methodology

Australia: The average numbers of teaching and working hours are calculated by weighting each State/Territory's response in accordance with the number of full-time equivalent public school teachers in that State/Territory.

Belgium (Flemish Community): The teaching time data provided refer to the formal situation and show the maximum number of hours as a best estimate.

Germany: Teaching time in Germany is the weighted average per ISCED level (according to the number of teachers per *Land* and per type of school).

United States: Teaching time and working time are estimated from SASS survey data (see *Sources*).

Sources

Australia:

Source: Teaching hours are from: New South Wales award; Teachers (Victorian Government Schools) Conditions of Employment Award 1995; Teachers' Award (Queensland) Section 26B; Western Australia's Government School Teachers' Certified Agreement (1998); South Australian Department of Education, Training and Employment policy document (Staffing Allocation 1999); Tasmanian Industrial Agreement; Northern Territory Department of Education evidence of practice within schools; and Australian Capital Territory policy and agreement with the Australian Education Union. National figures are weighted averages, based on numbers of FTE teaching staff in the different States and Territories.

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1999.

Comments: Government school teachers (full-time and part-time) comprise 74.4 per cent of ISCED 1 (primary school) teaching staff, and 65.0 per cent of ISCED 2 and 3 (secondary school) teaching staff, as measured in FTE (full-time equivalents). The remaining ISCED level 1 to 3 teachers are employed in private, government-dependent schools.

Austria:

Source: Legislation governing duties of teachers (Bundeslehrer-Lehrverpflichtungsgesetz; Landeslehrer-Dienstrechtsgesetz)

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: The population is all teachers employed by the Federation (*Bund*) or the *Länder*. Teachers working in primary and secondary education are employed by the *Länder*.

Belgium (Flemish Community):

Source: For teaching and working time: Guide for New Teachers (Gids voor de beginnende leraar) 1998-1999 edition; Besluit van de Vlaamse Regering betreffende de bekwaamheidsbewijzen, de weddeschalen, het prestatiestelsel en de bezoldigingsregeling in het secundair onderwijs), 14 June 1989. For working time only: Education Department, Afdeling Beleidsvoorbereiding Secundaire Scholen and Afdeling Begroting en Gegevensbeheer).

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: The population is teachers at ISCED 0, 1, 2 and 3 who teach in public or private government-dependent schools.

Belgium (French Community):

Nature of source: Law or policy document based on law (data on formal arrangements).

Czech Republic:

Nature of source: Number of teaching hours and working time are set by government degree (decree is based on the law).

School year: 1998-1999.

Denmark:

Source: Danmark som foregangsland. Uddannelse: Omkostninger og resultater, Finansministeriet 1997, p. 40.

Nature of source: Law or policy document based on law (data on formal arrangements). For teaching time, data also derive from national statistics (data on populations), while for working time data are also taken from collective agreements with the teaching unions.

Comments: These data are calculated by the Ministry of Finance in co-operation with the Ministry of Education from the provisions in the collective agreements for teachers and from national statistics. New collective agreements on working conditions for teachers came into force in August 2000.

England:

Source: For teaching time, the data derive from School Teachers' Pay and Conditions Document 1998.

France:

Source: Legislative provisions: ISCED 0 and 1: formal requirements for teachers in public and private government-dependent schools; ISCED 2 and 3: exhaustive survey of teachers in public and private government-dependent schools, except trainee teachers.

Nature of source: Law or policy document based on law (data on formal arrangements) and national statistics (data on populations).

School year: 1998-1999.

Germany:

Source: For teachers' working time, data derive from the Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany.

Nature of source: Law or policy document based on law (data on formal arrangements) and national statistics (data on populations).

School year: 1998-1999.

Greece:

Source: National legislation, Ministry of National Education and Religious Affairs.

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: The population is all teachers at ISCED 0, 1, 2 and 3.

Hungary:

Source: Public Education Act, 1993 (and the Public Education (Amendment) Act, 1996).

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: The population is all sponsoring bodies, principals, teachers and students in public educational institutions.

Iceland:

Source: ISCED 0: salary agreement between the Icelandic Association of Pre-School Teachers and the National Association of Local Authorities in Iceland 1997-2000; ISCED 1 and 2: salary agreement between the Teachers' Trade Union of Iceland and the National Association of Local Authorities in Iceland 1998-2000; ISCED 3: salary agreement between the Icelandic Teachers' Trade Union and the State 1997-2000.

Nature of source: Salary agreements.

School year: 1999.

Ireland:

Nature of source: Law or policy document based on law (data on formal arrangements).

Italy:

Source: D.P.R. 417/74L. 476/86 D.P.R. 399/88 C.C.N.L. 21.07.95 – 12.07.96.

Nature of source: Law or policy document based on law (data on formal arrangements).

Korea:

Source: School Curriculum of the Republic of Korea, 1992, Ministry of Education; Statistical Yearbook of Education, 1999, Ministry of Education and Korean Educational Development Institute.

School year: 1998-1999.

Mexico:

Source: Ministry of Education (Secretaría de Educación Pública): Pre-School Education Programme (Programa de Educación Preescolar), September 1992; Ministry of Education: Plan and Curricula 1993. Basic Education (Primary) (Plan y Programas de Estudio 1993. Educación Básica Primaria); Ministry of Education: Plan and Curricula 1993. Basic Education (Secondary) (Plan y Programas de Estudio 1993. Educación Básica Secundaria).

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1993.

Comments: The population is all teachers at ISCED 1, 2 and 3 (general and vocational).

Netherlands:

Source: CAO 97, WBO. WVO, WEB.

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

New Zealand:

Nature of source: Law or policy document based on law (data on formal arrangements) and knowledge of system by officials.

Norway:

Source: Agreements between the Ministry of Education and the teaching unions on working hours and working conditions.

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1998.

Portugal:

Source: Statutes of the Teaching Profession; collective employment agreement.

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: The population is all teachers at ISCED 1, 2 and 3 (general and vocational).

Scotland:

Source: Scheme of Salaries and Conditions of Service document.

Spain:

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Switzerland:

Source: Statistics on teachers, Federal Statistical Office (Bundesamt für Statistik) and Swiss Teachers' Union (Dachverband Schweizer Lehrerinnen und Lehrer, LCH).

Nature of source: Law or policy document based on law (data on formal arrangements) and national statistics (data on populations).

School year: 1998-1999.

Comments: The population is all teachers at ISCED 1, 2 and 3 (general and vocational) in public schools.

Turkey:

Source: Ministry of National Education, Fundamental Principles on Salaried Teaching Hours of Teachers and Administrators, 1986-1998.

Nature of source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: The population is all teachers at ISCED 1, 2 and 3 (general and vocational) in public schools.

United States:

Source: Schools and Staffing Surveys (SASS).

Nature of source: National survey (data on samples).

School year: 1993 to 1994.

Source: The population is teachers in schools serving at least grades 1-12 or the equivalent in the 50 states and the District of Columbia. The survey was conducted using a stratified cluster sample of 65 000 teachers in primary sampling units (PSUs). Data were collected by means of postal inquiry (written questionnaires) and a CATI (Computer Assisted Telephone Interview) follow-up of non-respondents. The data for the indicators are not based on the country's formal education policy, but are generated from a national sample of school districts, schools and teachers.

INDICATOR D4: Total intended instruction time for students in lower secondary education

General notes

Methodology

Table D4.2.

List of possible subjects under the headings used in Indicator D4:

Reading and writing in the mother tongue: reading and writing in the mother tongue; reading and writing in a second "mother tongue"; reading and writing in the tongue of the country as a second language (for non-native speakers); language studies; public speaking; literature.

Modern foreign languages: foreign languages other than Latin, classical Greek, etc.

Social studies: social studies; community studies; contemporary studies; economics; environmental studies; geography; history; humanities; legal studies; liberal studies; studies of one's own country; social sciences; ethical thinking; philosophy.

Arts: arts; music; visual arts; practical art; drama; performance music; photography; drawing; creative handicraft; creative needlework.

Mathematics: mathematics; mathematics with statistics; geometry.

Science: science; physics, physical science; chemistry; biology, human biology; environmental science; agriculture/horticulture/forestry.

Technology: orientation in technology, including information technology; computer studies; construction/ surveying; electronics; graphics and design; home economics; keyboard skills; word processing; workshop technology/design technology.

Religion: religion; history of religions; religious culture.

Physical education: physical education; gymnastics; dance; health.

Vocational skills: vocational skills (preparation for a specific occupation); technical studies; domestic science; accountancy; business studies; careers education; clothing and textiles; polytechnic programmes; secretarial studies; tourism and hospitality; sloyd (handicraft).

Other: subjects that cannot be classified under one of the above headings.

Notes on specific countries

Tables D4.1a, D4.1b and D4.2.

Coverage

Australia: The population of students aged 12 years was excluded because surveys were conducted on students in lower secondary school. In some States, students of this age group are in primary education.

The category "other" refers to subjects such as pastoral care. "Other" subjects exist in some States/Territories but not in others.

Austria: The category "other subjects" includes Latin.

Belgium (Flemish Community): The population of students aged 12 years was excluded because data were collected from lower secondary school students aged 12 to 13 years (first year of ISCED 2) and 13 to 14 years (second year of ISCED 2).

At ISCED 2, the government lays down the minimum periods per week to be spent on the prescribed core curriculum. The minimum in the first year is 27 and in the second, 24, although in second-year preparatory vocational secondary education it is 16.

Data derive from *Catholic* lower secondary education (government-dependent private education), in which about 75 per cent of the pupils in secondary education are enrolled.

Belgium (French Community): The category "other subjects" refers to classes organised by each school, such as Latin, Greek, Technology, Mathematics, Art Education, Physical Training, Sciences, Social Studies, Philosophy or Technical Education.

England: Economics/Law, Geography, History, Social Sciences, Philosophy, and Personal, Social and Health Education are included in Social Studies; Art/Drawing, Music, Drama, Handicraft and Photography are included in Arts; Domestic Science, Business Studies, secretarial and occupation-specific subjects are included in vocational skills; and Sex Education and Careers Education are included in "other subjects".

Finland: The category "other subjects" includes Technology, Home Economics and student counseling.

Germany: The category "other subjects" includes classical languages (*e.g.* Latin) and non-compulsory subjects.

Greece: The category "other subjects" includes Ancient Greek, Literature, Civic Education, and Domestic Economics.

Hungary: In Table D4.2, the population refers to students aged 13 years (grade seven).

"Earth and Environment" includes geography, environmental science and environmental studies.

Iceland: Technology is included in the non-compulsory curriculum.

Ireland: The compulsory core curriculum comprises Irish, English, Mathematics, History, Geography, Civics plus not less that two subjects from the following list of approved subjects: Latin, Greek, Spanish, Italian, Science, Technology, Home Economics, Music, Art-Craft-Design, Materials Technology, Metal Work, Technical Graphics, Business Studies, Typewriting, Environmental and Social Studies.

Japan: The category "other subjects" includes moral education, special activities and elective subjects. "Modern foreign languages" are an option taken by most pupils.

Korea: The national curriculum consists of a compulsory core and a non-compulsory part (extra-curricular activities and elective subjects). Extracurricular activities comprise student government activities, self-development activities, social service and other activities. Elective subjects include Chinese characters, Computer Science and Environmental Studies. At least 34 lessons must be allocated to elective subjects.

Netherlands: "Other" subjects include social and life skills ("verzorging").

Norway: "Other" subjects include Music, Domestic Science/Home Economics, Class Council and Students' Council.

Portugal: Students have to choose one of the following three subjects: second foreign language, Musical Education or Technological Education. Instead of Religion, students may choose Social and Personal Development.

Scotland: The subject Modern Foreign Languages is not applicable to students aged 12 years.

Sweden: Technology is included in Science, and Religion is included in Social Studies.

Interpretation

Belgium (Flemish Community): For the grade where the majority of students are 13 years of age, data on instruction time were provided for *first-year* A, not first-year B students. For the grade where the majority of students are 14 years of age, data were provided for students in the *second year*, not those in the vocational preparatory year.

Czech Republic: For students in grades six to nine (ages 12 to 15), the headteacher decides on the number of hours to be taught per subject in order to cover the minimum number of lessons per subject per year. The minimum weekly numbers of lessons (of 45 minutes) over this four-year period are Physics (6 lessons), Biology (6 lessons), Geography (6 lessons), History (6 lessons), Music (4 lessons), Civics (4 lessons), Arts (6 lessons), Domestic Science (4 lessons), Practical Work (4 lessons), optional subjects (6 lessons) and Chemistry (4 lessons, ages 14 and 15).

The 1984 Education Act (as subsequently amended) gives responsibility for "the design, condition and development of the education system" to the Czech Ministry of Education, Youth and Sports. The Ministry issues two basic documents: "Standards for Basic Education", setting out the educational objectives for the end of each stage of education, and "Rules for the Approval of Educational Programmes". Educational objectives are defined for seven broad study areas: languages, mathematics, natural sciences, social sciences, aesthetic education, health and lifestyle education, and crafts and technology. Rules for the aproval of educational programmes set "time limits" and rules for the design of the timetable. Each approved educational programme must comply with both documents.

In the Czech Republic, 14-year-old students attend one of two types of educational institution: basic school (základní kola) or gymnasium (víceleté gymnázium). There are different curricula for programmes within these institutions.

There are three educational programmes in basic school: General School (Obecná kola), Basic School (Základní kola) and National School (Národní kola). Since 1 September 1998, the number of lessons taught and lesson organisation are left to the discretion ot the school principal in all subjects. The minimum number of lessons per subject has to be observed, as well as the total number of lessons per week. Optional subjects may be introduced in grade 7, and are compulsory in grades 8 and 9. In addition, the school principal may initiate classes with more extensive coverage of some subjects or groups of subjects, or special classes for pupils with disabilities.

Finland: The upper three years of the comprehensive school curriculum include a considerable amount of flexibility in the form of elective subjects.

Germany: The agreement by the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* concerning types of school and programmes in lower secondary education lays down a framework for grades five to nine/ten, requiring certain core subjects in every type of school and programme (*e.g.* German, Mathematics, one foreign language, Natural Science). Grade six usually has a minimum of 28 periods per week, while grades seven and eight have a minimum of 30 periods per week. The maximum load is 34 45-minute periods per week.

Greece: The same legislation on minimum hours per subject applies to both public and private independent schools, although schools can increase the number of teaching hours per subject in certain programmes.

Hungary: All data refer to the National Core Curriculum of 1998-1999 for grades 1 to 7. The curriculum used in the school year 1997-1998 for 12-year-olds was still governed by the former 1978 curriculum, although it was already influenced by the new curriculum. which excludes 13-year-olds.

The amount of instruction time given is the minimum number of compulsory hours of student instruction. The Education Act entitles schools to use 30 per cent of teaching time to enhance the curriculum, to offer elective subjects, or to group students into smaller classes for particular subjects (*e.g.*, foreign languages or mathematics).

Mexico: For 14-year-olds (the third grade of lower secondary school), the prescribed curriculum laid down by the education authorities of each State of the Mexican Republic states that students must have a compulsory total of 1 200 50-minute lessons per year.

New Zealand: The prescribed curriculum for all State and State-integrated schools is set out in the New Zealand Curriculum Framework (1993), which is the official policy statement on the curriculum but does not have the status of a legal document, and in a series of seven national curriculum statements (paralleled by seven in the Maori language for schools in which the medium of instruction is Maori), which does have legal status once it has been published or "gazetted", *i.e.*, when a notice of its entry into force has been placed in the New Zealand Gazette. Once gazetted, the curriculum statements apply to all students in years one to ten in State and State-integrated schools. The objectives of the National Education Guidelines are also deemed to be part of every school's charter. The Guidelines include the statement that each school "... must foster student achievement by providing a balanced curriculum in accordance with the National Curriculum Statements". However, balance is not defined or prescribed in terms of time allocations or proportions.

Portugal: All students aged 12 to 14 years in compulsory schooling are subject to the same instruction time and curriculum, which allows for options and certain special programmes within a constant number of hours. The situation may be different in the case of students with learning difficulties or special needs.

Spain: Twelve-year-old students can select Religion or Socio-Cultural Activities, and 13 and 14-year-olds can choose Religion or Society, Culture and Religion. Although time must be devoted to one of these two subjects, it has been included in the non-compulsory part of the curriculum. Thirteen and 14-year-old students have a certain number of additional hours per year for optional subjects. These subjects may vary from one school to another.

Methodology

Australia: Figures are weighted means derived from data from the Education Department of each State and Territory.

Belgium (Flemish Community): As there are no formal regulations regarding total intended instruction time per subject in (lower) secondary education, survey data were used. The calculations are based on 36 school weeks although there were 36.2 school weeks in the reference year 1998-1999.

England: There are no legal requirements about allocations of time but the pattern recorded in the (annual) survey conforms to expectations based on the indicative guidelines.

Finland: All the figures are estimates based on a theoretical average.

Germany: The numbers of lessons (of 60 minutes each) per subject in Germany are averages based upon the numbers of hours per week for students in years six to eight, excluding special schools ("Sonderschulen").

Greece: Total instruction time per year was calculated by multiplying the total number of lessons per week by the total number of teaching weeks.

Ireland: There are no regulations regarding the precise amount of time to be spent each week on teaching the different subjects in the curriculum. However, the breakdown shown in the tables is an accurate representation of general practice in schools.

Italy: Data on intended instruction time are averaged across two types of school: 75 per cent of pupils attend for 1 020 hours and 25 per cent attend for 1 360 hours. The non-compulsory part is compulsory only for pupils who have chosen the longer programme (so-called *tempo prolungato*).

Mathematics and science are regarded as one subject in lower secondary education. Thus, the values in Table D4.2 represent a simple mean.

Spain: All figures are averages of the number of hours per year devoted to each subject in all the Autonomous Communities in Spain, weighted by the number of students in each Autonomous Community. Time devoted to breaks, festivities and holidays has been deducted.

Sweden: Intended instruction time *per year* for each school subject is not regulated nationally, but is decided locally. Thus, intended instruction time for ages 12 to 14 has been roughly calculated by dividing by nine the total number of hours per school subject required over the nine years of compulsory education. This may mean that intended instruction time for certain school subjects may be overestimated (this could be the case with reading and writing in the mother tongue or in Arts, for example), while it may be underestimated for other subjects (*e.g.*, Science).

Sources

Australia:

Source: State and Territory Education Departments.

Data source: Law or policy document based on law (data on formal arrangements) and national survey (data on samples) – two States only.

School year: 1999.

Comments: The population is government school students aged 13 and 14 years, who account for 65.3 per cent of 13-year-olds and 65.9 per cent of 14-year-olds attending school in Australia. The remaining students in these age groups attend private, government-dependent schools (Tables 26-28, pp.34-36, ABS (2000), *Schools Australia*, 1999 (Cat. No. 4221.0)). Data were collected by interview and telephone, and from historical data. In two States, the collection methodology used for the samples and the principal sources of information are unknown.

Austria:

Data source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Belgium (Flemish Community):

Source: Decreet betreffende het onderwijs-II, 31 July 1990; Koninklijk besluit nr.2 tot vaststelling van het maximum aantal lestijden per week in het voltijds secundair onderwijs, 21 August 1978; Lessentabellen van het katholiek secundair onderwijs), reference year 1998-1999, eerste leerjaar A en 2e leerjaar).

Data source: Law or policy document based on law (data on formal arrangements) and timetables of Catholic secondary education.

School year: 1998-1999.

Czech Republic:

Source: School Act (1984) as amended, Standards for Basic Education, Rules for Authorisation of Education Programmes.

Denmark:

Data source: Law or policy document based on law (data on formal arrangements) and national statistics (data on populations).

England:

Source: QCA Annual School Sampling Project.

School year: 1998-1999.

Finland:

Source: Comprehensive School Act (1983/476); Decree (1984/718); Framework Curriculum for Comprehensive Schools (1994), National Board of Education.

Data source: Law or policy document based on law (data on formal arrangements).

School year: 1994.

Comments: The population is pupils of compulsory school age who attend comprehensive school, *i.e.*, in practice the whole age group from seven to 16 years.

France:

Source: Legislative provisions.

Data source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: The population is pupils enrolled in the "fifth", "fourth" and "third" classes of the general curriculum in public schools.

Germany:

Data source: Law or policy document based on law (data on formal arrangements) and national statistics (data on populations).

School year: 1998-1999.

Greece:

Source: Ministry of National Education and Religious Affairs. The legislative provisions are contained in Decrees 447/1993 and 78/1997; Circular R⅔773/19-6-1997; and National Government Bulletin 185/A, 65/A/2-5-97.

Data source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Hungary:

Source: National Curriculum, 1978; National Curriculum, 1995; Public Education Act, 1996.

Data source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: The population is pupils enrolled in all public educational institutions.

Iceland:

Source: National Curriculum Guidelines.

Data source: Law or policy document based on law (data on formal arrangements).

Ireland:

Data source: Law or policy document based on law (data on formal arrangements).

Italy:

Data source: Law or policy document based on law (data on formal arrangements).

Japan:

Source: The Curriculum for Lower Secondary Schools (Chugakko-Gakushu-Shido-Yoryo), 1989, Ministry of Education, Science, Sports and Culture.

Data source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: The population is all lower secondary school students and teachers.

Korea:

Source: Middle School Curriculum, 1992, Ministry of Education.

School year: 1998-1999.

Comments: The population is pupils enrolled in middle school.

Mexico:

Source: Ministry of Education (Secretaría de Educación Pública): Plan and Curricula 1993. Basic Education (Secondary) (Plan y Programas de Estudio 1993. Educación Básica Secundaria).

Data source: Law or policy document based on law (data on formal arrangements).

School year: 1993.

Comments: Data refer to students at the secondary level of education.

Netherlands:

Source: WVO (Law on Secondary Education).

School year: 1998-1999.

Comments: Four per cent of the population were excluded.

New Zealand:

Source: New Zealand Curriculum Framework 1993 and Education Legislation Amendment Act 1998.

Data source: Law or policy document based on law (data on formal arrangements).

Norway:

Source: National curriculum.

Data source: Law or policy document based on law (data on formal arrangements).

Portugal:

Source: National curriculum.

Data source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: The population is pupils enrolled in grades seven to nine.

Scotland:

Data source: Although the curriculum in Scotland is not prescribed by statute, guidance is provided by the Scottish Executive Education Department and Learning and Teaching Scotland.

School year: 1999.

Spain:

Source: For communities under the Ministry of Education: Order of 27 April 1992 on the implementation of Primary Education (National Official Bulletin of 8 May 1992); Order of 28 February 1996, on the implementation of Lower Secondary Education (National Official Bulletin 56/96 of 5 March 1996). Separate curriculum documents exist for primary and lower secondary education in the Autonomous Communities of Andalusia, the Basque Country, the Canary Islands, Catalonia, Galicia, Navarre and the Community of Valencia.

Data source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Sweden:

Data source: Law or policy document based on law (data on formal arrangements).

Turkey:

Source: Regulations for Primary Education Institutions, 1992 and Lesson Timetable for Primary Schools, 1998.

Data source: Law or policy document based on law (data on formal arrangements).

School year: 1998-1999.

Comments: The population is pupils enrolled in grades six to eight in primary education.

USA:

Source: Schools and Staffing Surveys (SASS).

Data source: National survey (data on samples).

School year: 1993 to 1994.

Comments: The population is teachers in schools serving at least grades 1-12 or the equivalent in the 50 states and the District of Columbia. The survey was conducted using a stratified cluster sample of 65 000 teachers in primary sampling units (PSUs). Data were collected by postal inquiry (written questionnaires) and a CATI follow-up of non-respondents.

INDICATOR D5: Ratio of students to teaching staff

Notes on specific countries

Coverage

Table D5.1: See indicator D2 (Tables D2.1 to D2.3).

United Kingdom: No separate data are available on numbers of teachers at pre-primary and primary, and at lower secondary and upper secondary levels of education. These figures have been estimated, using a slightly different methodology to that used for the 2000 edition of Education at a Glance. The result is that students to teaching staff ratios at the pre-primary level have fallen, with a corresponding increase at the primary level, while students to teaching staff ratios at lower secondary level have increased, with a corresponding fall at upper secondary level.

Students to teaching staff ratios at upper secondary level only refer to upper secondary general education. Upper secondary vocational (further education) student data are based on a "whole-year count" (of students enrolled at any point in the year) rather than the "snap-shot" count used in previous editions of Education at a Glance. Students enrolled for only part of the year, on "short courses" lasting a few weeks or months, are included in the student count, and this will have distorted calculations of students to teaching staff ratios. As a result of these changes, United Kingdom students to teaching staff ratios are not comparable with figures in previous editions of Education at a Glance.

Table D5.2.

Czech Republic: Prior to 1996, the length of primary programmes was four years while lower secondary programmes lasted five years (these two stages together covered compulsory education). It was also possible for students to complete the final year of lower secondary programmes, which was also the last year of compulsory education, at upper secondary school. As a result, only about 5 per cent of students completed the last year of compulsory education in lower secondary schools.

From the school year 1996-1997, primary programmes were extended to five years, lower secondary programmes decreased to four years, and it became mandatory to complete the final year of compulsory education at lower secondary school. This decrease in the length of lower secondary programmes from five to four years resulted in a significant drop in lower secondary school student counts, by approximately 18 per cent, and also in a decrease in numbers of teachers in lower secondary education. Data for the school year 1999-2000 indicate a return to a more stable pattern in numbers of student enrolments and teaching staff. In addition, the mandatory completion of the final year at lower secondary school resulted in a small change in numbers of teachers in upper secondary schools.

Finland: Trend data on personnel at the upper secondary level include teaching staff and students in vocational programmes at ISCED 4, ISCED 5B, ISCED 5A and in experimental polytechnics at ISCED 5A. Thus, the index for the change in the number of upper secondary students is different from that shown in the trend data on expenditure and participation (see Table B4.3, Index of change in expenditure per student between 1995 and 1998) because the coverage is larger.

Spain: The structure of educational programmes at primary and secondary levels changed between the school years 1994-1995 and 1998-1999. The typical duration of primary and lower secondary education was five and three years respectively in the school year 1994-1995, and is now six years at primary and four years at lower secondary level. Conversely, the duration of upper secondary programmes was typically four years in 1994-1995 and is now two years. These changes affect the trends shown in Table D5.2 in primary, lower secondary and upper secondary education.

INDICATOR D6: Training teachers in Information and Communication Technology

INDICATOR D7: Use and availability of computers in schools and the teaching-learning process

General notes

Data are based on the Second Information Technology in Education Study (SITES), which was conducted by the International Association for the Evaluation of Educational Achievement (IEA).

The co-ordination centre for SITES is located at the University of Twente in the Netherlands. Dr. Willem J. Pelgrum was one of the principal researchers. For detailed notes and information, see Pelgrum and Anderson (eds.), *ICT and the Emerging Paradigm for Life Long Learning: a worldwide educational assessment of infrastructure, goals, and practices*, Amsterdam: IEA, 1999.

INDICATOR E1: Labour force participation by level of educational attainment

General notes

See Annex 3, notes on Indicator A2.

INDICATOR E2: Expected years in education, employment and non-employment between the ages of 15 and 29

General notes

Sources

See Table 5. Sources.

INDICATOR E3: Education and work among the youth population

General notes

Sources

See Table 5. Sources.

INDICATOR E4: Specific situation of youth population

General notes

Sources

See Table 5. Sources.

Table 5. **Sources (Indicators E2, E3 and E4)**

	Year	Data source	Period of data collection	Earnings period	Part-time definition	Primary sampling unit	Sample size	Non-response rate	Other comments
Australia	1999	Labour Force Survey, Survey of Transition from Education to Work, May 1998		1 week	Less than 35 hours per week	Individuals	63 003	7.30%	
Belgium	1999	Eurostat, European Labour Force Survey	Spring quarter	1 month		Households	35 000		
Canada	1999	Labour Force Survey	January to March 1999	1 week	Less than 30 hours per week	Households			
Czech Republic	1999	Labour Force Survey	1st quarter 1999	1 month	Less than 30 hours per week	Households	28 000 households	Unknown	All data established by the LFS were weighted by frequency of the individual age groups of men and women. The frequency also reflects data on natural changes in the population with time and on the age structure of migrants in 1997.
Denmark	1999	Eurostat, European Labour Force Survey	Spring quarter	1 month		Individuals	15 600		
Finland	1999	Statistics Finland, Monthly Labour Force Survey	January, February, March 1999	1 month	Respondent's answer	Individuals	19 717 individuals		
France	1999	Labor Force Survey	March 1999	Not reported	Specified in contract between employer and employee	Households	75 000	10%	
Germany	1999	Labour Force Survey	19 April to 25 April 1998	1 week	Less than 30 hours per week	Households	150 000		
Greece	1999	Labour Force Survey, National Statistical Service of Greece	One week in the second quarter of the year.	1 week	The definition derives from the definitions used in LFS. Work is considered part-time or full-time according to subjective definition by the respondent.	Households	30 772 households	Nearly 5% of the total surveyed households	
Hungary	1999	Eurostat, European Labour Force Survey	Spring quarter	1 month		Households	50 000 persons in 1993-97, 64 000 since 1998	20-21%	
Italy	1999	Labour Force Survey	The data refers to the 2nd quarter of each year (2nd week of April)	1 month		Households	75 512 households		
Luxembourg	1999	Eurostat, European Labour Force Survey	Spring quarter	1 month		Households	8 500		
Mexico	1999	Secretaría del Trabajo y Previsíon Social (STPS), Encuesta Nacional de Empleo (ENE)	Bi-annual survey since 1991, yearly since 1995		The survey covers civilian resident population aged 12 years and over excluding armed forces.	Households	48 000 in 1997 (national) and 135 000 in 1998 (by state).	Around 15%	Every other year, the survey is representative for state, which increases the sample significantly.
Netherlands	1999	Centraal Bureau voor de Statistiek, Statistics Netherlands, Labour Force Survey	1999	1 year	Less than 30 hours per week	Households	60 000 households		

Table 5. **Sources (Indicators E2, E3 and E4)** *(cont.)*

	Year	Data source	Period of data collection	Earnings period	Part-time definition	Primary sampling unit	Sample size	Non-response rate	Other comments
Poland	1999	Glowny Urzad Statystyczny, Labour Force Survey	The data are averages of published quarterly figures		Data refer to persons aged 15 and over.	Households	About 22 000 households.	1997 – 9.6% 1998 – 11.6%	
Portugal	1999	Instituto Nacional de Estatistica, Labour Force Survey	Quarterly means 1988	1 week		Households	20 000 households	10%	
Spain	1999	Labour Force Survey	January to March 1999	Other (not specified)	Less than 35 hours per week	Households	65 622 households per quarter	11.13%	Part of the non-response is treated. Final rate of non-response: 5.90%.
Sweden	1999	Labour Force Survey	January to March 1999	1 week		Individuals	17 000		
Switzerland	1999	Office Fédérale de la Statistique (OFS), Labour Force Survey	April to June 1999	1 month	Less than 30 hours per week	Households			Apprentices have a contract that is limited in time. They are not counted as people with a temporary job.
Turkey	1999	Household Labour Force Survey	Bi-annual	1 week	Less than 30 hours per week	Households	15 000 households in each survey	About 10%	
United States	1999	1998 Current Population Survey: October	The annual data are based on march survey	1 year	30 hours or less per week	Individuals (it is a household Survey but includes the individual level)	60 000 households, 94 000 persons age > = 15, 28 000 children < =14		ISCED 2 = grade7-9, ISCED 3 = grade 10-12, ICSED 5B/5A/6 = grade 13+

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Table 6. **Sources (Indicator E5)**

	Data source	Period of data collection	Earnings period	Primary Sampling Unit	Sample size	Non-response rate
Australia	Survey of Education and Training	1 week, March to April 1997	Weekly	Household	22 000 households	Not reported
Canada	Survey of Consumer Finances	1997	Calendar year	Household	Approximately 46 000 households	Approximately 16% non-response rate
Czech Republic	Microcensus 1996	1999	Calendar year	Household	28 148 households	Not reported
Denmark	*a)* Register of personal income *b)* Register of educational attainment of the population	*a)* End of 1998 *b)* October 1998	Calendar year	Not reported		Not reported
Finland	The Register-based Employment Statistics	Last seven days in 1997	Calendar year	Not reported		Not reported
France	Labour Force Survey	1999	Monthly	Household		7%
Germany	German Socio-economic Panel	1998	Other 12-month period	Household		Not reported
Hungary	Individual salary and earnings of employees	May 1999	Monthly	Not reported		Not reported
Ireland	European Community Household Panel, Living in Ireland Survey	1997	Calendar year	Household		Not reported
Italy	Banca d'Italia: "I bilanci delle famiglie italiane nell'anno 1998"	1998	Calendar year	Household	8 135 households	Not reported
Korea	The Basic Survey of Wage Structure	1998	Monthly	Establishment	About 400 000	Not reported
Netherlands	Structure of Earnings Survey 1997	1997	Calendar year	Not reported	Due to matching of three sources, sample size is not exactly known. The final database of the structure of earnings survey contains information of about 146 000 employees. The population is 5.869 million employees.	Not reported
New Zealand	Household Economic Survey	April 1998 to March 1999	Other 12-month period	Household	2 876 households	Approximately 20%
Norway	Based on Labour Force Survey and Income Tax Register	Labour Force Survey 2nd quarter 1998; Income Tax Register 1998	Calendar year	Individual	24 000 individuals	Not reported
Portugal	List of Personnel	October 1998	Monthly	Not reported		Not reported
Spain	European Household Panel (Second Wave)	1996	Other 12-month period	Household	6 522 households ; 23 179 individuals	Not reported
Sweden	National Income register	1998	Calendar year	Not reported		Not reported
Switzerland	Labour Force Survey	April to June 1999	Calendar year	Household		14.70%
United Kingdom	UK Labour Force Survey	Spring 1999	Weekly	Household	Approximately 24 000 households	Approximately 6%
United States	1998 March Current Population Survey	March 1999	Other 12-month period	Individual: It is a household Survey but includes the individual level.		Not reported

Note: All data refer to income from work before taxes.

INDICATOR E5: Earnings and educational attainment

General notes

Sources

See *Table* 6. *Sources*.

Notes on specific countries

Interpretation

Ireland: The data reported in EAG 2000 relate to usual gross hourly earnings in 1997. The data submitted for EAG 2001 relate to usual gross weekly earnings in 1997. There are substantial gender differences in hours worked by gender, so the weekly income data will show substantially greater gender differences compared to EAG 2000.

INDICATOR F1: Trends in mean mathematics and science achievement in the 8th grade (1995 and 1999)

Notes on specific countries

Coverage

Italy: In 1995, Italy was unable to cover the international desired target population.

Table 7. **Standard errors (Table F1.1)**

Mathematics achievement

	Mean		Standard deviation	
	1999	1995	1999	1995
Australia	4.84	3.80	2.94	2.10
Belgium (Fl.)	3.29	5.87	2.81	4.26
Canada	2.46	2.17	1.66	1.52
Czech Republic	4.18	4.52	2.37	2.02
England	4.15	2.98	2.17	2.28
Hungary	3.67	3.18	2.01	1.77
Italy	4.83	3.37	2.74	1.91
Japan	1.65	1.58	1.11	1.05
Korea	1.97	1.96	1.04	1.54
Netherlands	7.15	6.15	4.15	5.15
New Zealand	5.18	4.72	2.34	2.40
United States	3.97	4.75	2.37	2.21

Science achievement

	Mean		Standard deviation	
	1999	1995	1999	1995
Australia	4.40	4.03	2.08	2.44
Belgium (Fl.)	3.07	6.39	2.92	5.52
Canada	2.06	2.64	1.48	1.59
Czech Republic	4.17	4.55	2.04	2.67
England	4.75	3.57	3.00	2.60
Hungary	3.69	3.11	2.42	1.81
Italy	4.75	3.55	2.49	1.86
Japan	2.23	1.75	1.84	1.23
Korea	2.58	2.05	1.58	1.36
Netherlands	6.87	6.03	4.10	5.24
New Zealand	4.91	4.86	3.11	2.50
United States	4.55	5.56	2.05	3.09

Source: IEA TIMSS (1995) and TIMSS-R (1999).

INDICATOR F2: Student differences in mathematics and science achievement in the 8th grade (1995 and 1999)

Notes on specific countries

Coverage

Italy: In 1995, Italy was unable to cover the international desired target population.

Table 8. **Standard errors (Table F2.1)**

Mathematics achievement

	Mean		5th percentile		25th percentile		75th percentile		95th percentile	
	1999	1995	1999	1995	1999	1995	1999	1995	1999	1995
Australia	4.84	3.80	4.05	3.87	1.73	1.27	1.92	0.51	3.27	0.86
Belgium (Fl.)	3.29	5.87	3.41	3.84	1.77	1.45	1.58	0.23	3.62	1.85
Canada	2.46	2.17	2.16	2.32	1.61	1.38	1.23	0.52	1.65	1.07
Czech Republic	4.18	4.52	3.24	2.43	1.53	0.49	1.46	1.31	5.81	2.33
England	4.15	2.98	2.04	3.96	1.50	1.86	0.32	1.05	2.38	3.43
Hungary	3.67	3.18	3.87	2.48	1.59	0.72	1.03	0.93	2.39	3.06
Italy	4.83	3.37	3.24	4.16	2.40	1.50	1.03	0.84	2.87	1.05
Japan	1.65	1.58	1.38	2.31	1.37	0.99	1.55	1.12	2.17	1.40
Korea	1.97	1.96	2.10	4.14	1.50	1.66	1.34	0.56	2.33	2.00
Netherlands	7.15	6.15	4.75	4.16	1.85	1.28	1.95	0.96	3.74	2.92
New Zealand	5.18	4.72	3.53	1.39	1.74	1.12	2.31	0.43	4.02	1.65
United States	3.97	4.75	0.89	1.51	1.88	1.00	0.46	0.42	2.29	1.42

Science achievement

	Mean		5th percentile		25th percentile		75th percentile		95th percentile	
	1999	1995	1999	1995	1999	1995	1999	1995	1999	1995
Australia	4.40	4.03	4.51	1.90	2.28	0.57	0.63	1.05	2.93	1.07
Belgium (Fl.)	3.07	6.39	4.92	5.91	2.81	1.04	2.60	1.32	5.14	1.60
Canada	2.06	2.64	1.76	2.87	1.49	0.99	1.00	1.42	2.62	2.57
Czech Republic	4.17	4.55	4.94	2.64	2.27	0.94	2.50	1.49	2.79	1.20
England	4.75	3.57	3.21	4.23	2.72	2.11	2.83	2.04	4.81	1.36
Hungary	3.69	3.11	3.18	2.36	1.67	1.04	1.09	1.91	3.01	1.79
Italy	4.75	3.55	3.50	3.85	1.04	0.83	3.45	2.77	2.66	2.13
Japan	2.23	1.75	3.32	2.36	1.27	1.28	2.30	1.00	2.96	1.10
Korea	2.58	2.05	2.26	2.03	1.78	1.46	2.68	1.41	3.60	3.19
Netherlands	6.87	6.03	5.24	2.33	2.53	1.76	1.55	1.22	2.13	1.29
New Zealand	4.91	4.86	6.77	2.15	2.84	1.64	1.09	1.23	2.80	3.57
United States	4.55	5.56	2.62	2.48	2.00	1.26	1.65	0.88	0.85	1.85

Source: IEA TIMSS (1995) and TIMSS-R (1999).

INDICATOR F3: Income inequality and literacy inequality

General notes

The literacy scales are based on the International Adult Literacy Survey that was conducted by the OECD and Statistics Canada in 1994 and 1998.

INDICATOR F4: Gender differences in mathematics and science achievement in the 8th grade (1999)

Notes on specific countries

Coverage

Italy: Data are based on results from the 13 provinces that participated in TIMSS-R and thus will differ slightly from trend data on gender published in IEA and other publications, which are based on data from the nine provinces in which sampling requirements were met in both studies.

GLOSSARY

☐ CONTINUING EDUCATION AND TRAINING FOR ADULTS

Continuing education and training (CET) for adults refers to all kinds of general and job-related education and training organised, financed or sponsored by authorities, provided by employers or self-financed. Job-related continuing education and training refers to all organised, systematic education and training activities in which people take part in order to obtain knowledge and/or learn new skills for a current or a future job, to increase ➡ earnings and to improve job and/or career opportunities in current or other fields.

☐ COMPULSORY SUBJECTS

Subjects to be taught by each school and to be attended by each student.

☐ CURRICULUM (INTENDED)

The intended curriculum is the subject matter content as defined at the national or the educational system level. The intended curriculum is embodied in textbooks, in curriculum guides, in the content of examinations, and in policies, regulations, and other official statements generated to direct the educational system.

☐ EARNINGS

Earnings from work

Earnings from work refer to annual money earnings, *i.e.* direct pay for work before taxes. Income from other sources, such as government aid programmes, interest on capital, etc., is not taken into account. Mean earnings are calculated on the basis of data for all people with income from work, including the self-employed.

Relative earnings from work

Relative earnings from work are defined as the mean annual earnings from work of individuals with a certain level of ➡ educational attainment divided by the mean annual earnings from work of individuals whose highest level of education is the upper secondary level.

☐ EDUCATIONAL ATTAINMENT

Educational attainment is expressed by the highest completed level of education, defined according to the ➡ *International Standard Classification of Education* (ISCED).

☐ EDUCATIONAL COSTS

Educational costs represent the value of all resources used in the schooling process, whether reflected in school budgets and expenditures or not.

☐ EDUCATIONAL EXPENDITURE

Educational expenditure refers to the financial disbursements of educational institutions for the purchase of the various resources or inputs of the schooling process such as administrators, teachers, materials, equipment and facilities.

Current and capital

Current expenditure is expenditure on goods and services consumed within the current year, which needs to be made recurrently to sustain the production of educational services. Minor expenditure on items of equipment, below a certain cost threshold, are also reported as current spending. *Capital expenditure* represents the value of educational capital acquired or created during the year in question – that is, the amount of capital formation – regardless of whether the capital outlay was financed from current revenue or by borrowing. Capital expenditure includes outlays on construction, renovation, and major repair of buildings and expenditure for new or replacement equipment. Although capital investment requires a large initial expenditure, the plant and facilities have a lifetime that extends over many years.

Direct expenditure on educational institutions

Direct expenditure on educational institutions may take one of two forms: *i)* purchases by the government agency itself of educational resources to be used by educational institutions (*e.g.* direct payments of ➡ teachers' salaries by a central or regional education ministry); *ii)* payments by the government agency to educational institutions that have responsibility for purchasing educational resources themselves (*e.g.* a government appropriation or block grant to a university, which the university then uses to compensate staff and to buy other resources). Direct expenditure by a government agency does not include tuition payments received from students (or the families) enrolled in public schools under that agency's jurisdiction, even if the tuition payments flow, in the first instance, to the government agency rather than to the institution in question.

Financial aid to students

Financial aid to students comprises: *i) Government scholarships and other government grants to students* or *households*. These include, in addition to scholarships and similar grants (fellowships, awards, bursaries, etc.), the following items: the value of special subsidies provided to students, either in cash or in kind, such as free or reduced-price travel on public transport systems; and family allowances or child allowances *that are contingent on student status*. Any benefits provided to students or households in the form of tax reductions, tax subsidies, or other special tax provisions are not included; *ii) Student loans*, which are reported on a gross basis – that is, without subtracting or netting out repayments or interest payments from the borrowers (students or households).

Intergovernmental transfers

Intergovernmental transfers are transfers of funds designated for education from one level of government to another. The restriction to funds earmarked for education is very important in order to avoid ambiguity about funding sources. General-purpose intergovernmental transfers are not included (*e.g.* revenue sharing grants, general fiscal equalisation grants, or distributions of shared taxes from a national government to provinces, states, or *Länder*), even where such transfers provide the funds that regional or local authorities draw on to finance education.

Public and private sources

Public expenditure refers to the spending of public authorities at all levels. Expenditure that is not directly related to education (*e.g.* culture, sports, youth activities, etc.) is, in principle, not included. Expenditure on education by other ministries or equivalent institutions, for example Health and Agriculture, is included.

Private expenditure refers to expenditure funded by private sources, *i.e.* households and other private entities. "*Households*" means students and their families. "*Other private entities*" include private business firms and non-profit organisations, including religious organisations, charitable organisations, and business and labour associations. Private expenditure comprises school fees; materials such as textbooks and teaching equipment; transport to school (if organised by the school); meals (if provided by the school); boarding fees; and expenditure by employers on initial ➡ vocational training. Note that private ➡ educational institutions are considered service providers, not funding sources.

Staff compensation

Expenditure on staff compensation includes gross salaries plus non-salary compensation (fringe benefits). *Gross salary* means the total salary earned by employees (including any bonuses, extra allowances, etc.) before subtracting any taxes or employees' contributions for pensions, social security, or other purposes. *Non-salary compensation* includes expenditure by employers or public authorities on retirement programmes, health care or health insurance, unemployment compensation, disability insurance, other forms of social insurance, non-cash supplements (*e.g.* free or subsidised housing), maternity benefits, free or subsidised child care, and such other fringe benefits as each country may provide. This expenditure does not include contributions made by the employees themselves, or deducted from their gross salaries.

Transfers and payments to other private entities

Government transfers and certain other payments (mainly subsidies) to other private entities (firms and non-profit organisations) can take diverse forms – for example, transfers to business or labour associations that provide adult education; subsidies to firms or labour organisations (or associations of such entities) that operate apprenticeship programmes; subsidies to non-profit organisations that provide student housing or student meals; and interest rate subsidies to private financial institutions that make student loans.

☐ EDUCATIONAL INSTITUTIONS

Educational institutions are defined as decision-making centres which provide educational services to individuals and/or other institutions. The definition is based on the point of view of management and control, which are normally carried out by a Director, Principal, or President and/or a Governing Board, (or similar titles such as Management Committee, etc.). In general, if a centre has a Director, Principal, or President and a Governing Board then it is classified as an institution. If it lacks these, however, and is controlled by an educational institution, then it is not a separate institution but rather an off-campus centre of an institution. Where a centre is not managed by a Governing Board but is administered directly by a public education authority, the centre is classified as an institution in its own right.

Public and private educational institutions

Educational institutions are classified as either public or private according to whether a public agency or a private entity has the ultimate power to make decisions concerning the institution's affairs.

An institution is classified as *public* if it is: *i)* controlled and managed directly by a public education authority or agency; or *ii)* controlled and managed either by a government agency directly or by a governing body (Council, Committee, etc.), most of whose members are either appointed by a public authority or elected by public franchise.

An institution is classified as *private* if it is controlled and managed by a non-governmental organisation (*e.g.* a Church, a Trade Union or a business enterprise), or if its Governing Board consists mostly of members not selected by a public agency.

In general, the question of who has the ultimate management control over an institution is decided with reference to the power to determine the general activity of the school and to appoint the officers managing the school. The extent to which an institution receives its funding from public or private sources does *not* determine the classification status of the institution.

A distinction is made between "government-dependent" and "independent" private institutions on the basis of the degree of a private institution's dependence on funding from government sources. A government-dependent private institution is one that receives more than 50 per cent of its core funding from government agencies. An independent private institution is one that receives less than 50 per cent of its core funding from government agencies. "Core funding" refers to the funds that support the basic educational services of the institution. It does not include funds provided specifically for research projects, payments for services purchased or contracted by private organisations, or fees and subsidies received for ancillary services, such as lodging and meals. Additionally, institutions should be classified as government-dependent if their teaching staff are paid by a government agency – either directly or through government.

☐ EDUCATIONAL PERSONNEL: FULL-TIME, PART-TIME AND FULL-TIME EQUIVALENT

The classification of educational staff as "full-time" and "part-time" is based on a concept of statutory working time (as opposed to actual or total working time or actual teaching time). Part-time employment refers to individuals who have been employed to perform less than the amount of statutory working hours required of a full-time employee. A ➡ teacher who is employed for at least 90 per cent of the normal or statutory number of hours of work of a full-time teacher over the period of a complete school year is classified as a full-time teacher for the reporting of head-count data. A teacher who is employed for less than 90 per cent of the normal or statutory number of hours of work of a full-time teacher over the period of a complete school year is classified as a part-time teacher. *Full-time equivalents* are generally calculated in person years. The unit for the measurement of full-time equivalents is full-time employment, *i.e.* a full-time teacher equals one FTE. The full-time equivalence of part-time educational staff is then determined by calculating the ratio of hours worked over the statutory hours worked by a full-time employee during the school year.

☐ EDUCATIONAL RESEARCH AND DEVELOPMENT (R&D)

Educational R&D is systematic, original investigation or inquiry and associated developmental activities concerning: the social, cultural, economic and political context within which education systems operate; the purposes of education; the processes of teaching, learning and personal development; the work of educators; the resources and organisational arrangements to support educational work; the policies and strategies to achieve educational objectives; and the social, cultural, political and economic outcomes of education.

The major categories of R&D personnel are researchers, technicians and equivalent staff, and other support staff. Post-graduate students are counted as researchers, but reported separately within that category.

☐ EMPLOYED POPULATION

The *employed population* is defined, in accordance with ILO guidelines, as all persons above a specific age who during a specified brief period, either one week or one day, were in paid employment or self-employment. It includes both those in civilian employment and those in the armed forces.

☐ GRADUATES

Graduates are those who were enrolled in the final year of a level of education and completed it successfully during the reference year. However, there are exceptions (especially at the university tertiary level of education) where graduation can also be recognised by the awarding of a certificate without the requirement that the participants are enrolled. *Completion* is defined by each country: in some countries, completion occurs as a result of passing an examination or a series of examinations. In other countries, completion occurs after a requisite number of course hours have been accumulated (although completion of some or all of the course hours may also involve examinations). *Success* is also defined by each country: in some countries it is associated with the obtaining of a degree, certificate, or diploma after a final examination; while in other countries, it is defined by the completion of programmes without a final examination.

GROSS DOMESTIC PRODUCT

Gross Domestic Product (GDP) refers to the producers' value of the gross outputs of resident producers, including distributive trades and transport, less the value of purchasers' intermediate consumption plus import duties. GDP is expressed in local money (in millions). For countries which provide this information for a reference year different from the calendar year (such as Australia and New Zealand) adjustments are made by linearly weighting their GDP between two adjacent national reference years to match the calendar year. Data for GDP are provided in Annex 2.

GROSS SALARY

Gross salary is the sum of wages (total sum of money that is paid by the employer for the labour supplied) minus employer's contributions for social security and pension (according to existing salary scales). Bonuses that constitute a regular part of the wages – such as a thirteenth month or a holiday or regional bonus – are included in the gross salary.

ISCED LEVELS OF EDUCATION

The levels of education used in this publication are defined with reference to the *International Standard Classification of Education* (ISCED) of 1997. However, some statistics on trends in education are based on the older version of ISCED of 1976 in order to ensure comparability between the two different years. For details on ISCED 1997 and how it is nationally implemented see *Classifying Educational Programmes: Manual for ISCED-97 Implementation in OECD Countries* (Paris, 1999).

Early childhood education (ISCED 0)

Early childhood education serves the dual purpose of giving the child daily care while the parents are at work and contributing to the child's social and intellectual development in keeping with the rules and guidelines of the pre-primary curriculum. It covers all forms of organised and sustained centre-based activities designed to foster learning, and emotional and social development in children. The term *centre-based* distinguishes between activities in institutional settings (such as primary schools, pre-schools, kindergartens, day-care centres) and services provided in households or family settings. Generally start programmes at this level not before the age of 3. Children aged 2 years or younger are, however, also included in the statistics if they are enrolled in programmes that are considered educational by the country concerned.

Primary level of education (ISCED 1)

Primary education usually begins at age 5, 6, or 7 and lasts for 4 to 6 years (the mode of the OECD countries is 6 years). Programmes at the primary level generally require no previous formal education. Coverage at the primary level corresponds to ISCED 1, except that an upper threshold is specified as follows: in countries where basic education covers the entire compulsory school period (*i.e.* where there is no break in the system between primary and lower secondary education) and where in such cases basic education lasts for more than 6 years, only the first 6 years following early childhood education are counted as primary education.

Lower secondary level of education (ISCED 2)

The core of *lower secondary education* continues the basic programmes of the primary level but usually in a more subject-oriented manner. This usually consists of 2 to 6 years of schooling (the mode of OECD countries is 3 years). The common feature of lower secondary programmes is their entrance requirement, *i.e.* a minimum of primary education completed or demonstrable ability to benefit from participation in the programme.

Upper secondary level of education (ISCED 3)

Upper secondary education usually consists of 2 to 5 years of schooling. Admission into educational programmes at the upper secondary level requires the completion of the lower secondary level of education, or a combination of basic education and vocational experience that demonstrates an ability to handle the subject matter. Upper secondary education may either be *preparatory, i.e.* preparing students for tertiary education(ISCED 3A and ISCED 3B) or *terminal, i.e.* preparing the students for entry directly into working life (ISCED 3C).

Post-secondary non-tertiary level of education (ISCED 4)

Post-secondary non-tertiary educational programmes straddle the boundary between upper secondary and post-secondary education from an international point of view, even though they might clearly be considered upper secondary or post-secondary programmes in a national context. Although their content may not be significantly more advanced than upper secondary programmes, they serve to broaden the knowledge of participants who have already gained an upper secondary qualification. The students tend to be older than those enrolled at the upper secondary level.

First stage of tertiary education (ISCED 5)

ISCED 5 programmes have an educational content more advanced than those offered at Levels 3 and 4. Entry to these programmes normally requires the successful completion of ISCED Level 3A or 3B or a similar qualification at ISCED Level 4A or 4B. Programmes at Level 5 must have a cumulative theoretical duration of at least 2 years from the beginning of Level 5 and do not lead directly to the award of an advanced research qualification (those programmes are at ISCED 6).

Tertiary-type A programmes (ISCED 5A) are largely theory-based and are designed to provide sufficient qualifications for entry to advanced research programmes and professions with high skill requirements, such as medicine, dentistry or architecture. Tertiary-type A programmes have a minimum cumulative theoretical duration (at tertiary level) of three years' full-time equivalent, although they typically last four or more years. These programmes are not exclusively offered at universities. Conversely, not all programmes nationally recognised as university programmes fulfil the criteria to be classified as tertiary-type A. Tertiary-type A programmes include second degree programmes like the American Master. First and second programmes are sub-classified by the cumulative duration of the programmes, *i.e.* the total study time needed at the tertiary level to complete the degree.

Tertiary-type B programmes (ISCED 5B) are typically shorter than those of tertiary-type A and focus on practical, technical or occupational skills for direct entry into the labour market, although some theoretical foundations may be covered in the respective programmes. They have a minimum duration of two years full-time equivalent at the tertiary level.

Advanced Research Qualification (ISCED 6)

This level is reserved for tertiary programmes that lead directly to the award of an advanced research qualification, *e.g.* an Ph. D. The theoretical duration of these programmes is 3 years full-time in most countries (for a cumulative total of at least 7 years full-time at the tertiary level), although the actual enrolment time is typically longer. The programmes are devoted to advanced study and original research.

NEW ENTRANTS TO A LEVEL OF EDUCATION

New entrants to a level of education are students who are entering any programme leading to a recognised qualification at this level of education for the first time, irrespective of whether students enter the programme at the beginning or at an advanced stage of the programme. Individuals who are returning to study at a level following a period of absence from studying at that same level are not considered new entrants. Foreign students who enrol in a country's education system for the first time in a post-graduate programme are considered new entrants to the tertiary level.

☐ PURCHASING POWER PARITIES

Purchasing Power Parities (PPPs) are the currency exchange rates that equalise the purchasing power of different currencies. This means that a given sum of money, when converted into different currencies at the PPP rates, will buy the same basket of goods and services in all countries. In other words, PPPs are the rates of currency conversion which eliminate the differences in price levels among countries. Thus, when expenditure on GDP for different countries is converted into a common currency by means of PPPs, it is, in effect, expressed at the same set of international prices so that comparisons between countries reflect only differences in the volume of goods and services purchased. The purchasing power parities used in this publication are given in Annex 2.

☐ STUDENTS

A *student* is defined as any individual participating in educational services covered by the data collection. The *number of students enrolled* refers to the number of individuals (head count) who are enrolled within the reference period and not necessarily to the number of registrations. Each student enrolled is counted only once.

Students enrolled: Full-time, part-time and full-time equivalent

Students are classified by their pattern of attendance, *i.e.*, full-time or part-time. The part-time/full-time classification is regarded as an *attribute of student participation* rather than as an attribute of the educational programmes or the provision of education in general. Four elements are used to decide whether a student is full-time or part-time: the units of measurement for course load; a normal full-time course load, which is used as the criterion for establishing full-time participation; the student's actual course load; and the period of time over which the course loads are measured. In general, students enrolled in *primary and secondary level* educational programmes are considered to participate full-time if they attend school for at least 75 per cent of the school day or week (as locally defined) and would normally be expected to be in the programme for the entire academic year. Otherwise, they are considered part-time. When determining full-time/part-time status, the work-based component in combined school and work-based programmes is included. At the *tertiary level*, an individual is considered full-time if he or she is taking a course load or educational programme considered to require at least 75 per cent of a full-time commitment of time and resources. Additionally, it is expected that the student will remain in the programme for the entire year.

The *full-time equivalent* (FTE) *measure* attempts to standardise a student's actual load against the normal load. For the reduction of head-count data to FTEs, where data and norms on individual participation are available, course load is measured as the product of the fraction of the normal course load for a full-time student and the fraction of the school/academic year [FTE = (actual course load/normal course load) * (actual duration of study during reference period/normal duration of study during reference period)]. When actual course load information is not available, a full-time student is considered equal to one FTE.

☐ TEACHERS

A *teacher* is defined as a person whose professional activity involves the transmission of knowledge, attitudes and skills that are stipulated in a formal curriculum to students enrolled in an educational programme. The teacher category includes only personnel who participate directly in instructing students.

This definition does not depend on the qualification held by the teacher or on the delivery mechanism. It is based on three concepts: *activity*, thus excluding those without active teaching duties– although teachers temporarily not at work (*e.g.* for reasons of illness or injury, matemity or parental leave, holiday or vacation) are included; *profession*, thus excluding people who work occasionally or in a voluntary capacity in ➡ educational institutions; and *educational programme*, thus excluding people who provide services other than formal instruction to students (*e.g.* supervisors, activity organisers, etc.), whether the programme is established at the national or school level.

In ➡ vocational and technical education, teachers of the "school element" of apprenticeships in a dual system are included in the definition, and trainers of the "in-company element" of a dual system are excluded.

Headteachers without teaching responsibilities are not defined as teachers, but classified separately. Headteachers who do have teaching responsibilities are defined as (part-time) teachers, even if they only teach for 10 per cent of their time. Former teachers, people who work occasionally or in a voluntary capacity in schools, people who provide services other than formal instruction, *e.g.*, supervisors or activity organisers, are also excluded.

Teacher student ratios are based on ➡ full-time equivalents (FTEs) of teacher and students.

☐ **TYPICAL AGES**

Typical ages refer to the ages that normally correspond to the age at entry and ending of a cycle of education. These ages relate to the theoretical duration of a cycle assuming full-time attendance and no repetition of a year. The assumption is made that, at least in the ordinary education system, a student can proceed through the educational programme in a standard number of years, which is referred to as the theoretical duration of the programme. The *typical starting age* is the age at the *beginning* of the *first* school/academic year of the relevant level and programme. The *typical ending age* is the age at the *beginning* of the *last* school/academic year of the relevant level and programme. The *typical graduation age* is the age at the *end* of the *last* school/academic year of the relevant level and programme when the qualification is obtained. Using a transformation key that relates the levels of a school system to ISCED, the typical age range for each ISCED level can be derived.

☐ **TOTAL LABOUR FORCE**

The *total labour force* or currently active population comprises all persons who fulfil the requirements for inclusion among the employed or the unemployed as defined in OECD *Labour Force Statistics.*

☐ **TOTAL POPULATION**

The *total population* comprises all nationals present in or temporarily absent from the country and aliens permanently settled in the country. For further details, see OECD *Labour Force Statistics.*

☐ **TOTAL PUBLIC EXPENDITURE**

Total public expenditure corresponds to the non-repayable current and capital expenditure of all levels of government. Current expenditure includes final consumption expenditure (*e.g.* compensation of employees, consumption intermediate goods and services, consumption of fixed capital, and military expenditure), property income paid, subsidies, and other current transfers paid (*e.g.* social security, social assistance, pensions and other welfare benefits). Capital expenditure is spending to acquire and/or improve fixed capital assets, land, intangible assets, government stocks, and non-military, non-financial assets, and spending to finance net capital transfers. The total public expenditure used in this publication are given in Annex 2.

UNEMPLOYED

The *unemployed* are defined, in accordance with the ILO guidelines on unemployment statistics, as persons who are without work, actively seeking employment and currently available to start work. The unemployment rate is defined as the number of unemployed persons as a percentage of the labour force.

VOCATIONAL, PRE-VOCATIONAL AND TECHNICAL EDUCATION

Some indicators distinguish between three categories based on the degree to which a programme is specifically oriented towards a specific class of occupations or trades and leads to a labour-market relevant qualification:

General education is not designed explicitly to prepare participants for a specific class of occupations or trades or for entry into further vocational or technical education programmes. Less than 25 per cent of the programme content is vocational or technical.

Pre-vocational education is mainly designed to introduce participants to the world of work and to prepare them for entry into further vocational or technical education programmes. Successful completion of such programmes does not lead to a labour-market relevant vocational or technical qualification.

Vocational education prepares participants for direct entry, without further training, into specific occupations. Successful completion of such programmes leads to a labour-market relevant vocational qualification.

Some indicators divide vocational programmes into *school-based programmes and combined school and work-based programmes* on the basis of the amount of training that is provided in school as opposed to training in the workplace. In *school-based* vocational and technical programmes, instruction takes place (either partly or exclusively) in ➡ educational institutions. These include special training centres for vocational education run by public or private authorities or enterprise-based special training centres if these qualify as educational institutions. These programmes can have an on-the-job training component, *i.e.* a component of some practical experience in the workplace. In *combined school and work-based programmes*, instruction is shared between school and the workplace, although instruction may take place primarily in the workplace. Programmes are classified as combined school and work-based if less than 75 per cent of the curriculum is presented in the school environment or through distance education. Programmes that are more than 90 per cent work-based are excluded.

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READERS' SURVEY

Education at a Glance – OECD Indicators

The aim of this questionnaire is to measure your opinions of the OECD's *Education at a Glance* publication

Q1 **In which area do you work?**

Teaching administrator or schools administrator ☐	Research in education ☐	Public service or Government Administration ☐
Non-Governmental Organisation ☐	Private sector ☐	Media/journalism ☐

Other (please specify) ____________________

***Education at a Glance* includes the following indicators. Please indicate how well they meet your needs (1 = poorly, 4 = very well)**

Q2 **Context of Education**

	Not relevant	1	2	3	4
Relative size of the school-age population	☐	☐	☐	☐	☐
Educational attainment of the adult population	☐	☐	☐	☐	☐
Links between human capital and economic growth	☐	☐	☐	☐	☐

Q3 **Financial and Human Resources Invested in Education**

	Not relevant	1	2	3	4
Educational expenditure per student	☐	☐	☐	☐	☐
Expenditure on educational institutions relative to GDP	☐	☐	☐	☐	☐
Relative proportions of public/private investment	☐	☐	☐	☐	☐
Total public expenditure on education	☐	☐	☐	☐	☐
Support for students and households through public subsidies	☐	☐	☐	☐	☐
Expenditure on institutions by service and resource category	☐	☐	☐	☐	☐

Q4 **Access to Education, Participation and Progression**

	Not relevant	1	2	3	4
Participation in education over the lifecycle	☐	☐	☐	☐	☐
Participation in and graduation from secondary education	☐	☐	☐	☐	☐
Access to and participation in tertiary education	☐	☐	☐	☐	☐
Completion of tertiary education	☐	☐	☐	☐	☐
Students receiving additional resources to access the curriculum	☐	☐	☐	☐	☐
Participation in continuing education and training among the adult population	☐	☐	☐	☐	☐

Q5 **Learning Environment and Organisation of Schools**

	Not relevant	1	2	3	4
Salaries of teachers in public primary and secondary schools	☐	☐	☐	☐	☐
Age and gender distribution of teachers	☐	☐	☐	☐	☐
Teaching time and teachers' working time	☐	☐	☐	☐	☐
Total intended instruction time for students in lower secondary education	☐	☐	☐	☐	☐
Ratio of students to teaching staff	☐	☐	☐	☐	☐
Training teachers in Information and Communication Technology (ICT)	☐	☐	☐	☐	☐
Use and availability of ICT in schools and the teaching-learning process	☐	☐	☐	☐	☐

Q6 **Individual, Social and Labour Market Outcomes of Education**

	Not relevant	1	2	3	4
Labour force participation by level of educational attainment	☐	☐	☐	☐	☐
Expected years in education, employment and non-employment between the ages of 15 and 29	☐	☐	☐	☐	☐
Education and work among the youth population	☐	☐	☐	☐	☐
Specific situation of the youth population	☐	☐	☐	☐	☐
Earnings and educational attainment	☐	☐	☐	☐	☐

Q7 **Learning Outcomes of Education**

	Not relevant	1	2	3	4
Trends in mean mathematics and science achievement in the 8th grade	❑	❑	❑	❑	❑
Student differences in mathematics and science achievement in the 8th grade	❑	❑	❑	❑	❑
Income inequality and literacy inequality	❑	❑	❑	❑	❑
Gender differences in mathematics and science achievement in the 8th grade	❑	❑	❑	❑	❑

Q8 **What other educational indicators would help you with work or study?**

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Q9 **How do you rate the printed publication's... (1 = poor, 4 = very good)**

	1	2	3	4
Presentation of the graphs	❑	❑	❑	❑
Presentation of the tables	❑	❑	❑	❑
Overall layout and readability	❑	❑	❑	❑
Quality of the textual analysis	❑	❑	❑	❑
Quality of the data	❑	❑	❑	❑

Q10 **On the number of indicators and the balance of text to graphics, do you think the publication shonld do more or less?**

	more	less	stay the same
The number of indicators published	❑	❑	❑
Textual analysis	❑	❑	❑

Q11 **In 2000, a 16-page summary report was published. How well did it meet your needs? 1=poorly, 4=very well)**

1	2	3	4	Did not see a copy
❑	❑	❑	❑	❑

Q12 **Did you know that the underlying database is published on CD-ROM and online via www.SourceOECD.org?**

On CD-ROM, yes ....❑ On-line via Source OECD, yes ....❑ No for either..............❑

Q13 **If you have used the database on CD or online: how well does it meets your needs? (1 = poorly, 4 = very well)**

	1	2	3	4	Not used
In terms of indicators included	❑	❑	❑	❑	❑
In terms of ease of use	❑	❑	❑	❑	❑

Q14 **Do you have any snggestions for how *Education at a Glance* could be improved?**

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Thank you for completing this questionnaire.

Please return it by fax to: +33 1 45 24 90 98

Or by mail to: Hannah Cocks, OECD, 2 rue André Pascal, Paris 75775 Cedex 16, France

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Education at a Glance
OECD INDICATORS

Across OECD countries, governments are seeking policies to make education more effective while searching for additional resources to meet the increasing demand for education. The OECD education indicators enable countries to see themselves in the light of other countries' performance.

The 2001 edition of *Education at a Glance – OECD Indicators* provides a rich, comparable and up-to-date array of indicators. The indicators represent the consensus of professional thinking on how to measure the current state of education internationally. They provide information on the human and financial resources invested in education, on how education and learning systems operate and evolve, and on the returns to educational investments. The thematic organisation of the volume and the background information accompanying the tables and charts make this publication a valuable resource for anyone interested in analysing education systems across countries.

This year's edition of *Education at a Glance* includes new indicators on: how the levels and distributions of student achievement have evolved; the incentive structures governments offer to attract and retain qualified teachers; the availability and use of information and communication technologies in the teaching-learning process; public subsidies and transfers for education and their beneficiaries; and participation in skill improvement among the employed population.

Finally, for many indicators, a significantly larger number of OECD countries are now providing data. Through the World Education Indicators programme, a wide range of non-member countries have also contributed to this year's edition of *Education at a Glance*, extending the coverage of some of the indicators to almost two-thirds of the world population.

The data underlying the OECD education indicators are accessible via the Internet at: ***www.oecd.org/els/education/ei/index.htm.***

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The companion volume *Education Policy Analysis* takes up selected themes of key importance for governments.

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The CD-ROM provides a richer array of comparative education statistics and indicators. Some series start from 1985. The database is in Beyond 20/20™, a user-friendly Windows™-based software which allows the user to view, print and export selected data, and prepare customised tables and graphs.

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