

Education at a Glance

OECD INDICATORS

Country Profile for Canada



2003

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* See table on page 2 for comparison information on indicators marked with an asterisk.

Results for Canada, G7 countries, and others for selected indicators from Education at a Glance 2003

Indicator	Canada	France	Germany	Italy	Japan	United Kingdom	United States	High	Low	OECD Country mean
A2 (Table A2.3) Percentage of the population (25- to 64-year-olds) that has attained tertiary-type A education, 2001	20%	12%	13%	10%	19%	18%	28%	United States 28%	Portugal/Austria 7%	15%
A5 (Table A5.1) Percentage of 15-year-olds below or at level 1 on the PISA reading literacy scale, 2000	9%	15%	23%	19%	10%	13%	18%	Mexico 44%	Korea 6%	18%
A8 (Table A8.2) Percentage of 15-year-olds in Cluster 1 and their mean score on the PISA combined reading literacy scale, 2000	24.3% 507	32.6% 488	24.1% 464	25.8% 469	14.5% 482	17.1% 503	28.4% 478	Luxembourg 39.4% 434	Iceland 6.6% 449	22.4% 468
B1 (Table B1.1) Expenditure on educational institutions per student, all tertiary (USD), 2000	\$14,983	\$8,373	\$10,898	\$8,065	\$10,914	\$9,657	\$20,358	United States \$20,358	Poland \$3,222	\$9,571
B3 (Table B3.2) Percentage of private expenditure on tertiary education, 2000	39%	14.3%	8.2%	22.5%	55.1%	32.3%	66.1%	Korea 76.7%	Greece 0.3%	21.4%
CI (Table CI.2) Number of years at (for) which over 90% of the population are enrolled, 2001	12 years	15 years	12 years	13 years	14 years	12 years	11 Years	Belgium/ France 15 years	Turkey 6 years	12 years
C5 (Table C5.1) Percentage of 20- to 24-year-olds employed by level of educational attainment, 2001	55%	49.3%	54.4%	55.4%	N/A	43.6%	61.8%	Iceland 90.7% 94.8%	Slovak Rep. 16.7% Turkey 49.1%	64.4%
Below upper secondary	81.4%	80.2%	82.0%	60.1%		83.0%	79.7%			78.7%
Upper secondary and above										
D2 (Table D2.2) Ratio of students to teaching staff in public and private institutions, 2001	18.3	19.5	19.4	10.8	20.6	20.5	16.3	Korea 32.1 Mexico 27.3	Denmark 10.0 Portugal 8.9	17.0
Primary education	17.8	12.3	15.2	10.2	15.1	14.5	15.9			13.9
All secondary education										

¹ Cluster 1 comprises the least diversified readers.

Introductory Note

This document, *Country Profile for Canada*, is intended to provide an overview of the data reported for Canada in *Education at a Glance, OECD Indicators 2003* (EAG 2003). Readers are invited to explore the full document in more depth, if they wish. The text in italic type in this country profile is extracted directly from EAG 2003 and has page (p.) and paragraph (para.) references to the longer document. The comments in regular type relate to Canada, but are derived from the tables and charts in EAG 2003.

The section entitled Background Information at the end of this document is drawn directly from the “Introduction” in EAG 2003 and is included here for the reader’s convenience. The sections are entitled “Organising Framework for the 2003 Edition of Education at a Glance,” “Content and Highlights,” describing each of the indicators in some detail, and “Further Resources.”

Indicators for which there are no Canadian data:

- A3: Graduates by field of study
- A4: Reading literacy of 4th-grade students
- A10: Fifteen-year-olds’ self-regulated learning
- A11: Gender differences in student performance
- C3: Foreign students in tertiary education
- D1: Total intended instruction time for students in primary and secondary education
- D3: Teachers’ and students’ use of information and communication technology in upper secondary education
- D4: Teacher training and professional development of teachers
- D5: Salaries of teachers in public primary and secondary schools
- D6: Teaching time and teachers’ working time
- D7: Teacher supply and demand

CHAPTER A: The Output of Educational Institutions and the Impact of Learning

A1: Current upper secondary graduation rates and attainment of the adult population

A comparison of the levels of educational attainment between older and younger age groups indicates marked progress with regard to the percentage of the population graduating from upper secondary education (Chart A1.2). On average, only 60 per cent of 45 to 54 year-olds have attained upper secondary level of education, compared to 74 per cent of 25 to 34 year-olds. [p.36, para.6]

Canada is well above the OECD average for graduation from upper secondary education, with 81 per cent of 45 to 54 year-olds and 89 per cent of 25 to 34 year-olds having attained the upper secondary level of education.

A2: Current tertiary graduation and survival rates and attainment of the adult population

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. As measured by tertiary qualifications, there has been a general increase in the stock of higher-level skills in the adult population. Among OECD countries, only 14 per cent of 45 to 54 year-olds hold tertiary-type A and advanced research qualifications, whereas 18 per cent of 25 to 34 year-olds do so (Table A2.3). In some countries this increase has been marked. In Korea, for example, only 11 per cent of 45 to 54 year-olds, have obtained a tertiary qualification compared to 25 per cent among 25 to 34 year-olds. [p.47, para.1]

In **Canada** the change is somewhat less: increasing from 20 to 25 per cent between the two age groups. **Canada** has some of the highest rates of attainment of the OECD countries in Tertiary-type A and advanced research programmes, and in the level of attainment for all types of tertiary education combined, **Canada** has the highest rates.

*An overview of the level of educational attainment at the tertiary level (Table A2.4) over the last ten years confirms the strong trend of increases in the proportion of the adult population attaining tertiary education. For the 19 OECD countries where data are available for both 1991 and 2001, the average increase is of 10 percentage points, with notable increases in **Canada** and Spain (19 percentage points) and in Ireland (28 percentage points). [p.47, para.2]*

*The increase in the stock of tertiary graduates has not been equal for both males and females. In 1991, the levels of tertiary attainment were about the same for males and females. Ten years later, the advantage is clearly in favour of females. On average in the OECD, 29 per cent of females have attained tertiary qualifications, whereas only 26 per cent of males have. The relative increase of tertiary qualifications for females is especially noticeable in **Canada**, Ireland and Spain, showing an increase of 23, 31 and 21 percentage points respectively. [p.48, para.3]*

A3: Graduates by field of study

Data on graduates refer to the academic year 2000–2001 and are based on the UOE data collection on education statistics that is annually administered by the OECD.

Canada did not participate in this indicator.

A4: Reading literacy of 4th-grade students

This indicator looks at results from PIRLS 2001 for 16 OECD countries.

*The **Canadian** provinces of Ontario and Quebec also took part in the study, but as these represent less than 65 per cent of **Canada** as a whole, **Canada** is not shown in the tables and charts. [p.67, para.5]*

A5: Reading literacy of 15-year-olds

As seen in Box A5.1 [p.71], *PISA provides an interpretative framework for performance levels in reading literacy. Proficiency in reading is examined at five levels, each representing tasks of increasing complexity, with Level 5 being the highest. [p.70, para.4]*

Across countries, on average, 10 per cent of students reach proficiency Level 5, 32 per cent reach at least Level 4 (Levels 4 and 5), 61 per cent reach at least Level 3, 82 per cent reach at least Level 2, and 94 per cent reach at least Level 1. [p.70, para.5]

*Examining individual countries' performance by proficiency level is revealing: In five countries (Australia, **Canada**, Finland, New Zealand and the United Kingdom), 15 per cent or more of students reach the highest level of proficiency in reading literacy. [p.70, para.6]*

*In one third of OECD countries, between 67 and 79 per cent of 15-year-old students are proficient at least at Level 3 on the reading literacy scale: Australia, **Canada**, Finland, Ireland, Japan, Korea, New Zealand, Sweden and the United Kingdom. Using these nine countries to explore the question "is the pattern of proficiency similar across countries?" several patterns emerge. In **Canada** and Finland, for instance, relatively large proportions of students reach Level 5 and at least 90 per cent of students in each country reach at least Level 2 - these countries show strong results across the reading literacy scale. In Australia, Ireland, New Zealand and the United Kingdom, there are large numbers of students at the highest level, but over 10 per cent of students perform at or below Level 1. These countries perform well in getting students to higher levels of proficiency but succeed less well than **Canada** or Finland in reducing the proportion with low skills. [p.72, para.1]*

Only 2 per cent of 15-year-olds in **Canada** perform below level 1 and 7 per cent perform at level 1. The mean score for 15-year-olds in **Canada** is 534 points, which is above the OECD average of 500 points.

A6: Mathematical and scientific literacy of 15-year-olds

*Students in Japan display the highest mean scores in mathematical literacy, although their scores cannot be distinguished statistically from those of students in three other top-performing countries: Korea, the Netherlands and New Zealand. Other countries that score significantly above the OECD average include Australia, Austria, Belgium, **Canada**, Denmark, Finland, France, Iceland, Liechtenstein, Sweden, Switzerland and the United Kingdom (Chart A6.1). [p.84, para.5]*

*On the scientific literacy scale, students in Korea and Japan demonstrate the highest average performance compared to students in other OECD countries. Australia, Austria, **Canada**, the Czech Republic, Finland, Ireland, New Zealand, Sweden and the United Kingdom are among other countries that score significantly above the OECD average (Chart A6.2). [p.84, para.6]*

It is useful to relate the range of performance to average performance. This comparison shows that wide disparities in student performance are not a necessary condition for a country to attain a high level of overall performance. On the contrary, it is striking to see that five of the countries with the

*smallest differences between the 75th and 25th percentiles on the mathematical literacy scale, namely **Canada**, Finland, Iceland, Japan and Korea, all perform significantly above the OECD average (Table A6.1). Furthermore, four of them, **Canada**, Finland, Japan and Korea are among the six best-performing countries in mathematical literacy. A similar pattern is observed for scientific literacy. Again, **Canada**, Finland, Japan and Korea are among the six countries with the smallest differences between 75th and 25th percentiles, as well as among the six best performing countries. [p.86, para.4]*

A7: How student performance varies between schools

Indicators A5 and A6 have shown that, in most countries, there are considerable differences in performance within each education system. This variation may result from the background of students and schools, from the human and financial resources available to schools, from curricula differences, from selection policies and practices and from the way in which teaching is organised and delivered. [p.93, para.1]

This indicator examines the variation between schools and the variation within schools. **Canada** has less variation between schools than most OECD countries, while the variation in student performance within schools is higher than most OECD countries.

A8: Profiles of 15-year-old readers

Grouping students by their involvement in diversified reading can provide insight into the relationship between reading practices and reading literacy. Performance on the combined reading literacy scale is related among OECD countries to the frequency with which students report reading a diversity of materials. Students in Cluster 1, the least diversified readers, had the lowest mean score (468) on the combined reading literacy scale compared to students in other clusters, and score significantly below the OECD average. The modestly diversified readers in Cluster 2 had a mean score of 498 points, which is statistically similar to the OECD average and significantly higher than the mean score for students in Cluster 1. By contrast, the diversified readers of shorter texts (Cluster 3) scored higher than the OECD average (514 points versus 500 points), while the diversified readers of longer texts in Cluster 4 scored significantly higher, with 539 points, than both the OECD average and the average of students in Cluster 3. The average difference between scores of the least diversified readers (Cluster 1) and the diversified readers of longer texts (Cluster 4) was 71 points, almost an entire proficiency level (Table A8.2). [p.101, para.2]

Of 15-year-olds in **Canada**, 24.3% fit into Cluster 1. However, their mean score is 507, which is higher than the OECD average of 468. In Cluster 3, only 16.2% of 15-year-olds in **Canada** fall into this category, while the OECD average is 28.3%. Interestingly, the mean score for **Canada** on the PISA combined reading literacy scale for Cluster 3 (531) is still well above the OECD country mean of 514.

A9: Engagement in reading of 15-year-olds

Indicator A9 examines the level of reading engagement for 15-year-olds, using data from PISA. Importantly, this indicator explores the potential role of engagement in moderating the impact of social background on student performance in reading literacy. [p.108, para.3]

In every OECD country, females have a higher average engagement in reading than males. [p.109, para.2]

Not surprisingly, students who have parents with the highest occupational status and who are highly engaged in reading obtain the highest average scores (583 points) on the combined reading literacy scale. Conversely, students who have parents with the lowest occupational status and who are the least engaged in reading had the lowest average scores (423 points) among the 9 groups. [p.109, para.5]

Perhaps more importantly, 15-year-old students who are highly engaged readers and whose parents have the lowest occupational status achieved a significantly higher average reading score (540 points) than students whose parents have the highest occupational status but who are poorly engaged in reading (491 points). [p.110, para.1]

A10: Fifteen year-olds' self-regulated learning

*Twenty-six of the 32 countries that participated in PISA 2000 administered the self-regulated learning component on which this indicator is based: **Canada**, France, Greece, Ireland, Japan, and Spain as well as the French Community of Belgium and England did not participate in this option. [p.121, para.2]*

A11: Gender differences in student performance

This indicator uses the same self-regulated learning component as Indicator A10. **Canada** did not participate.

A12: Labour force participation by level of educational attainment

Variation between countries in labour force participation by females is a primary factor in the differences in overall participation rates between OECD countries. The overall labour force participation rates for males aged 25 to 64 range from 75 per cent to 96 per cent. By contrast, reflecting very different cultural and social patterns, labour force participation among females ranges from 27 per cent to 86 per cent. [p.145, para.3]

*The gap in participation rates of males aged 25 to 64 years is particularly wide between upper secondary graduates and those who have not completed an upper secondary qualification. In 18 out of 30 OECD countries (including **Canada**), the difference in the rate of participation between upper secondary graduates and those without such a qualification exceeds ten percentage points. [p.145, para.5]*

*Labour force participation rates for females aged 25 to 64 years show yet more marked differences, not only between those with below upper secondary and those with upper secondary attainment (20 percentage points or more in 15 out of the 30 OECD countries) but also between those with upper secondary and those with tertiary-type A attainment (around 10 percentage points or more in 23 countries, including **Canada**.) [p.146, para.2]*

A13: Expected years in education, employment and non-employment between the ages of 15 and 29

On average, a young person aged 15 in 2001 can expect to be in education for around six and a half years (Table A13.1). [p.153, para.3]

The average overall number of expected years in education is marginally higher for females, 6.5 compared with 6.3 years. [p.153, para.5]

In **Canada** the rate for males is 6.5, while the rate for females is 7.

*By and large, males and females 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, females appear to be at a disadvantage in Greece, Portugal and Spain and at an advantage in Australia, **Canada**, Germany, Hungary, the Slovak Republic, Turkey and the United Kingdom (Table A13.1). In some of the latter countries, however, notably in Australia, the United Kingdom, and in particular Turkey, the lower expectancy for females is largely influenced by the fact that many females leave the labour market, thereby reducing pressure on jobs. [p.154, para.2]*

A14: The returns to education: education and earnings

Earnings differentials according to educational attainment are a measure of the current financial incentives in a particular country for an individual to invest in further education. Earnings differentials may also reflect differences in the supply of educational programmes at different levels or the barriers in access to those programmes. [p.158, para.3]

*Tertiary education enhances earnings relative to upper secondary and post-secondary non-tertiary education more for females than for males in Australia, Belgium, **Canada**, Ireland, Korea, the Netherlands, New Zealand, Norway, Switzerland and the United Kingdom, whereas the reverse is true in the remaining countries (Table A14.1). [p.159, para.2]*

Canada was also part of a study on the estimated private internal rates of return to upper secondary and university education. It was found that these rates of return differed significantly across the 10 countries studied. Factors that were analysed include: higher pre-tax earnings, higher taxes, lower unemployment risk, tuition fees and public student support. Of these factors it was noted that *tuition fees had a particularly negative impact on rates of return to tertiary education in the United States and, to a lesser extent, in **Canada** and the United Kingdom. [p.162, para.4]*

A15: The returns to education: links between human capital and economic growth

In the last decade, per capita growth rates in OECD countries have ceased to converge. Productivity has accelerated in some of the most affluent economies, most notably the United States, and slowed down substantially in others, such as continental Europe and Japan, while signs of what has been named a “New Economy”, driven by the upsurge of new technologies, have emerged. [p.170, para.4]

*Data for 2000 show the United States well at the top of the OECD income distribution, followed by Norway, **Canada** and Switzerland with GDP per capita about 15-20 percentage points below the United States’ figure. The bulk of the OECD countries including all other major economies lagged behind per capita GDP in the United States by 25-35 percentage points (Chart A15.1). [p.171, para.1]*

*Compared with the previous decade, hourly labour productivity picked up in a number of countries, including Australia, Finland, Germany, Norway, Portugal, Sweden and the United States, while it declined in the other countries. However, these changes in productivity trends were accompanied by different employment patterns across countries. Among the G-7 economies, significant employment increase in the United States (as well as in **Canada** and Japan with no acceleration in productivity) contrasted sharply with declines in Germany and Italy. [p.173, para.2]*

OECD countries have invested heavily in education over past decades and this has resulted in a positive contribution of human capital enhancement in growth rates of GDP per person employed, or

*labour productivity. Over the past decade, skill upgrading amongst workers was particularly marked in Europe, although it was accompanied by sluggish employment growth because productivity gains were achieved in part by dismissals or not employing workers with low skills. By contrast, in the United States, Australia, **Canada**, the Netherlands and New Zealand, skill upgrading has played, at best, a modest role in GDP growth per employed person. Improving labour-market conditions in these countries has widened the employment base, especially in the 1990s, allowing low-skilled workers to get a foothold in employment. [p.174-5]*

However, education plays an important role in this equation, not only as an input linking aggregate output to the stocks of productive inputs and technical efficiency, but as a key determinant of the rate of technological progress that affects the output per worker. [p.175, para.2]

CHAPTER B: Financial and Human Resources Invested in Education

B1: Educational expenditure per student

Canada spends US\$ 7,764 per student. The ways in which resources are allocated across the different levels of education vary widely. In **Canada**, spending at the tertiary level is one of the highest rates among OECD countries, while spending at the secondary level is close to the OECD average.

*On average, expenditure on Research and Development (R&D) in tertiary institutions represents 27 per cent of all tertiary expenditures. In six out of 21 OECD countries for which tertiary expenditures are separated by type of services, R&D expenditure in tertiary institutions represents more than 35 per cent of tertiary expenditure. On a per-student basis, this can translate into significant amounts, as in Australia, Austria, Belgium, **Canada**, Denmark, Germany, the Netherlands, Sweden and the United Kingdom, where expenditure for R&D in tertiary institutions amounts to over US\$ 3,000 per student (Chart B1.2 and Table B6.2). [p.185, para.5]*

The relationship between GDP per capita and expenditure per student is complex. Countries with a GDP per capita equivalent to 25 000 US dollars or less demonstrate a clear positive relationship between spending on education per student and GDP per capita. [p.190, para.4]

*However, on the other hand, there is a considerable variation in spending on education per student among OECD countries with a GDP per capita greater than 25 000 US dollars (see ovals in Chart B1.5). The higher GDP per capita, the greater the variation in expenditure devoted to students. Thus, Austria, **Canada** and Ireland, for example, are countries with similar levels of GDP per capita which spend very different proportions of their GDP per capita per student in secondary education. The proportion of national income spent per secondary student in **Canada** and Ireland — 21 and respectively 16 per cent of GDP per capita — is below the OECD average. By contrast, Austria spends 31 per cent of GDP per capita per secondary student, which is one of the highest proportions (Table B1.2). [p.190, para.5]*

*In general, changes in expenditure on education per student are linked to changes in GDP per capita. However, in eight out of 22 OECD countries expenditure on educational institutions per tertiary student decreased between 1995 and 2000 whereas GDP per capita increased over the same period (see arrows in blue on Chart B1.7). Expenditure per student increased in all other countries. In nine of these — **Canada**, France, Germany, Ireland, Italy, Japan, Spain, Switzerland and Turkey — expenditure on education per student increased at a greater rate than GDP per capita between 1995 and 2000. In all the other OECD countries, GDP per capita increased at a greater rate than expenditure per tertiary student. [p.194, para.3]*

B2: Expenditure on educational institutions relative to gross domestic product

*The highest spending on educational institutions can be observed in Korea and the United States, with around 7.0 per cent of GDP accounted for by public and private spending on educational institutions, followed by **Canada**, Denmark, Iceland and Sweden with more than 6.2 per cent. Nine out of 29 OECD countries, however, spend less than 5 per cent of GDP on educational institutions, and in Greece, the Slovak Republic and Turkey this figure is only between 3.4 and 4.2 per cent (Table B2.1a). [p.201, para.6]*

Spending on educational institutions increased between 1995 and 2000 in real terms but tended to lag behind growth in GDP. Around two-thirds of OECD countries showed a decrease in the

proportion of GDP devoted to educational institutions. Most notable are the Czech Republic, Finland, Ireland, Norway and the Slovak Republic where the proportion of GDP spent on education decreased by more than 0.7 percentage points (Table B2.1a). [p.202, para.5]

Canada decreased by 0.6 percentage points.

***Canada**, Korea and the United States spend 2.6, 2.6 and 2.7 per cent, respectively, of their GDP on tertiary institutions (Chart B2.1). This accounts for more than one-third of all of their expenditure on educational institutions. [p.203, para.4]*

*Countries vary in the levels of education at which spending has increased. Austria, Finland, France, Germany, Greece, Mexico, Portugal, Sweden and Turkey, OECD countries with a comparably high increase in absolute spending on educational institutions between 1995 and 2000, invested the additional resources in similar proportions in primary, secondary and post-secondary non-tertiary and tertiary education. Australia, Denmark, the Netherlands, New Zealand, Poland and the United Kingdom invested most of the increases made between 1995 and 2000 into primary, secondary and post-secondary non-tertiary education. Conversely, in **Canada**, Hungary, Ireland, Italy, Japan, the Slovak Republic, Spain, and Switzerland spending on tertiary education increased by more than 10 per cent between 1995 and 2000 while spending on lower levels increased much more slowly (Chart B2.2). [p.203-5, para.5]*

B3: Relative proportions of public and private investment in educational institutions

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, just over 88 per cent of all funds for educational institutions comes directly from public sources. In addition, 0.6 per cent is channelled to institutions via public subsidies to households (Table B3.1). [p.214, para.2]

Canada is below the OECD average with 80 per cent of all funds for education institutions coming from public sources.

Investment in early childhood education is of key importance in order to build a strong foundation for lifelong learning and to ensure equitable access to learning opportunities later in school. In pre-primary education, the private share of total payments to educational institutions is very variable. It ranges from 5 per cent or less in Belgium, France, Italy, the Netherlands, the Slovak Republic, and the United Kingdom, to well over a third in Australia and Germany, around 50 per cent in Japan, 60 per cent in Ireland and 75 per cent in Korea (Table B3.2). [p.214, para.5]

In **Canada** 8 per cent of the funds for pre-primary education come from private sources.

On average across OECD countries at the primary secondary level, 12 per cent of the public funds designated for educational institutions is spent in institutions that are privately managed (Table B3.3). [p.215, para.2]

In **Canada**, however, only 2 per cent is spent in institutions that are privately managed.

The proportion of expenditure on tertiary institutions covered by individuals, businesses and other private sources including private payments that are subsidies, ranges from less than 3 per cent in Denmark, Finland and Greece, to around one half in Australia and Japan, two-thirds in the United States and over three-quarters in Korea (Chart B3.1). [p.215, para.7]

In **Canada**, 39 per cent of expenditure on tertiary institutions comes from private sources, which is well above the OECD mean of 21 per cent.

A comparison between 1995 and 2000 of the proportion of educational expenditure which was met through private funds shows that as many countries recorded increases as recorded decreases in the private funding share (Chart B3.2 and Table B3.1). [p.216, para.2]

*Six countries for whom comparable data are available recorded shifts from public to private funding of primary, secondary and post-secondary non-tertiary education. In only one of these countries, **Canada**, was the increase in the private share more than one percentage point (private share increasing from 6 per cent to 8 per cent). [p.216, para.3]*

B4: Total public expenditure on education

*The public-sector proportion of the funding of the different levels of education varies widely between OECD countries. In 2000, OECD countries spent between 6.3 (Greece) and 16.5 per cent (Mexico) of total public expenditure on primary, secondary and post-secondary non-tertiary education, and between 1.6 (Japan) and 4.7 per cent (**Canada**) on tertiary education. On average in OECD countries, reflecting in the main higher student numbers, public funding of primary, secondary and post-secondary non-tertiary education is three times that of tertiary education. This ratio varies by country from less than double in **Canada**, Denmark and Finland to as high as five times in Korea. The latter is indicative of the relatively high proportion of private funds which go into tertiary education in Korea (Table B4.1). [p.224, para.3]*

B5: Support for students and households through public subsidies

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, for example, when subsidies are used to cover tuition fees. Other subsidies for education do not relate to educational institutions, such as subsidies for student living costs. [p.231, para.5]

In **Canada** 21 per cent of the public expenditure for tertiary education is spent on subsidies for education to private entities. While **Canada** is slightly above the OECD country average of 17 per cent, other countries range from less than 5 per cent to over 30 per cent (Chart B5.1). Data for **Canada** and the United States at the tertiary level include postsecondary non-tertiary education. Data were not provided for **Canada** at the primary and secondary levels for this indicator.

B6: Expenditure on institutions by service category and by resource category

*Below the tertiary level, educational expenditure is dominated by spending on educational core 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 OECD countries in expenditure on R&D activities can therefore explain a significant part of the differences between OECD countries in overall educational expenditure per tertiary student. High levels of R&D spending in tertiary educational institutions in Australia, Austria, Belgium, **Canada**, Denmark, Finland, Germany, the Netherlands, Sweden and the United Kingdom (between 0.4 and 0.8 of GDP), for example, imply that spending on education per student in these OECD countries would be considerably lower if the R&D component were excluded (Table B6.1). [p.239-40, para.6]*

*On average, OECD countries spend 0.2 per cent of their GDP on subsidies for ancillary services provided by primary, secondary and post-secondary non-tertiary institutions. This represents 6 per cent of total spending on these institutions. At the high end, the Czech Republic, Finland, France, Hungary and the Slovak Republic spend about 10 per cent or more of total spending on educational institutions on ancillary services, which translates into more than US\$ 500 (PPP) per student in Finland, France and Sweden and more than US\$ 250 (PPP) per student in **Canada**, the Czech Republic, the Flemish Community of Belgium, Hungary, Italy, the United Kingdom and the United States (Tables B6.1 and B6.2). [p.240, para.3]*

*On average, expenditure on subsidies for ancillary services at the tertiary level amounts to just 0.1 per cent of GDP. Nevertheless, on a per student basis this can translate into significant amounts, as in Australia, **Canada**, the Flemish community of Belgium, France, Hungary and United States, where subsidies for ancillary services amount to over US\$ 500 (PPP). At the tertiary level, ancillary services are more often provided on a self-financed basis (Table B6.1). [p.240, para.5]*

*There is some noticeable variation between OECD 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 86 per cent in Greece, Iceland and Korea to 96 per cent or more in **Canada**, the Flemish Community of Belgium, Mexico, the Netherlands, Portugal and the Slovak Republic (Chart B6.2). [p.242, para.3]*

In all except three OECD countries, 70 per cent or more of current expenditure at the primary, secondary and post-secondary non-tertiary levels is spent on staff salaries. [p.242, side-bar]

CHAPTER C: Access to Education, Participation and Progression

C1: School expectancy and enrolment rates

One way of looking at participation in education is to estimate the number of years during which a five-year-old child can expect to be in either full-time or part-time education during his/her lifetime, given current enrolment rates. School expectancy is estimated by taking the sum of enrolment rates for each single year of age, starting at age five (Chart C1.1). In OECD countries, a child in Mexico and Turkey can expect to be in education for 12 years or less, compared to 19 or more years in Australia, Belgium, Finland, Sweden and the United Kingdom. [p.253, para.3]

In **Canada** a five-year-old child can expect to be in education for 17 years. Over 90% of students are enrolled for 12 years until the age of 17, which is one year past the end of compulsory education.

*In the majority of OECD countries, universal enrolment, which is defined here as enrolment rates exceeding 90 per cent, starts between the ages of five and six years. However, in Belgium, the Czech Republic, Denmark, France, Germany, Hungary, Iceland, Italy, Japan, New Zealand, Norway, Spain, Sweden and the United Kingdom, over 70 per cent of children aged three to four are already enrolled in either pre-primary or primary programmes (Table C1.2). Their enrolment rates range from under 22 per cent in **Canada**, Korea, Switzerland and Turkey, to over 90 per cent in Belgium, France, Iceland, Italy and Spain. [p.254, para.5]*

On average in OECD countries, a 17-year-old can expect to receive 2.6 years of tertiary education. Both tertiary entry rates and the typical duration of study affect the expectancy of tertiary education. [p.256, para.2]

Canada is slightly above the OECD average at 2.8 years.

C2: Entry to and expected years in tertiary education and participation in secondary education

Although the majority of primary and secondary students are enrolled in publicly managed and financed schools, in OECD countries, 20 per cent of upper secondary students on average are now enrolled in privately managed schools (Table C2.4 and Chart 2.3). [p.264, para.6]

Canada is well below this average with only 5 per cent of upper secondary students enrolled in privately managed schools.

C3: Foreign students in tertiary education

Foreign student data are collected by host countries and therefore relate to students that are coming in rather than to students going abroad. [p.279, para.6]

Canada is not included in this indicator.

C4: Education and work status of the youth population

Table C4.1 reveals the education and work status of young people in the age groups 15 to 19, 20 to 24 and 25 to 29. Working while studying can occur as part 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 Austria, the Czech Republic, Germany and Switzerland, and 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 between the ages of 15 and 19 is a major feature of the transition from education to work in Australia, **Canada**, Denmark, Iceland, the Netherlands, Norway, the United States and, to a lesser extent, Finland, Sweden Switzerland and the United Kingdom. Finally, in Belgium, France, Ireland and the Mediterranean and Eastern European countries, initial education and work are rarely associated. [p.288, para.2]*

*The employment status of males and females is broadly similar during the years spent in education, with the exception of Austria and Germany, where noticeably more males participate in work-study programmes. In Australia, **Canada**, Denmark, Finland, Iceland, the Netherlands, Norway and Sweden, noticeably more females than males in the 15- to 29-year-old age group combine work outside school hours with education (Tables C4.1a and C4.1b). [p.288, para.3]*

C5: The situation of the youth population with low levels of education

The consequences of having left school without an upper secondary qualification can be observed by comparing the work status of those with and those without an upper secondary qualification. In all OECD countries except one, higher educational attainment is associated with an increase in the employment rate on average of 19 percentage points for 20 to 24-year-olds not in education. [p.300, para.3]

In **Canada** the employment rate of 20- to 24-year-olds who are not in education and do not have upper secondary education is 55 per cent, while for those with upper secondary education it is 81 per cent.

CHAPTER D: The Learning Environment and Organisation of Schools

The data for many of the indicators in Chapter D are drawn from the Upper Secondary School Survey. **Canada** did not participate in this study so is not represented in many Chapter D indicators.

D1: Total intended instruction time for students in primary and secondary education

Canada is not represented in this indicator

D2: Class size and ratio of students to teaching staff

The indicator also provides the ratio of students to teaching staff, which is obtained by dividing the number of full-time equivalent “students” at a given level of education by the number of full-time equivalent “teachers” at that level and in similar types of institutions. The relationship between the ratio of students to teaching staff and average class size is influenced by many factors, including the number of hours during which a student attends class each day, the length of a teacher’s working day, the number of classes or students for which a teacher is responsible, the subject taught, the division of the teacher’s time between teaching and other duties, the grouping of students within classes and the practice of team-teaching. [p.323, para.2]

The OECD mean ratio of students to teaching staff decreases as the level of education rises, from 17 in primary to 14 for secondary. **Canada**, however, does not reflect this decrease in ratio, maintaining the ratio of 18 students to each member of the teaching staff at the primary and secondary level.

*There are significant differences among OECD countries in the distribution of educational staff between teaching and other categories, reflecting differences among countries in the organisation and management of schooling. Teaching and non-teaching staff employed in primary and secondary schools ranges from less than 80 persons per 1 000 students enrolled in **Canada** (67.7), Japan, Korea and Mexico to 119 persons or more per 1 000 students in France, Hungary, Iceland and Italy (Chart D2.3). [p.324, para.5]*

Among the 13 OECD countries for which data are available for each category of personnel employed in education, the staff not classified as instructional personnel represent on average 30 per cent of the total teaching and non-teaching staff in primary and secondary schools. [p.324, para.7]

In **Canada**, less than 20 per cent of the total teaching and non-teaching staff are not classified as instructional personnel.

D3: Teachers’ and students’ use of information and communication technology in upper secondary education

Canada is not represented in this indicator

D4: Teacher training and professional development of teachers

Canada is not represented in this indicator

D5: Salaries of teachers in public primary and secondary schools

Canada is not represented in this indicator

D6: Teaching time and teachers' working time

Canada is not represented in this indicator

D7: Teacher supply and demand

Canada is not represented in this indicator

D8: Age and gender distribution of teachers, and staff employed in education

*In most OECD countries, the majority of primary and secondary students are taught by teachers aged 40 years or older. In **Canada**, Germany, Italy, Japan, the Netherlands, New Zealand, Portugal and Sweden, 60 per cent or more of primary teachers are over 40 years of age. On the other hand, Belgium, Korea and Poland seem to have a comparatively young teaching force; more than 50 per cent of primary teachers are younger than 40 years of age. [p.404, para.3]*

The entry of young teachers into the profession is crucial in order to compensate for the large number of teachers who will reach retirement age in the next decade. Over the period 1998 to 2001, the number of teachers aged under 30 years increased at approximately the same rate as the number of teachers aged over 50 years (Chart D8.1). [p.406, para.3]

In **Canada** there was no increase in teachers aged over 50 years; however, the number of teachers aged under 30 years did increase by 3 per cent.

*In all OECD countries, pre-primary and primary teachers are predominantly female. **Canada** and France are the only countries where more than 20 per cent of pre-primary teachers are male². With the exceptions of Denmark, Japan, Luxembourg and Mexico, 68 per cent or more of the primary teachers in OECD countries are female (Table D8.2). [p.406, para.4]*

*Although females tend to dominate the profession in pre-primary and primary education, and less so in lower secondary education, in upper secondary education the percentages of male and female teachers are similar. In general, females are less well represented at higher levels of education than at lower levels. At the upper secondary level, the proportion of teachers who are female ranges from 40 per cent or less in Denmark, Germany, Japan and Korea to between 59 and 68 per cent in **Canada**, Hungary, Italy, Poland, Portugal, the Slovak Republic and the United Kingdom. At the tertiary-type A and advanced research programmes level, male teachers are in the majority in all countries for which data are available. At this level, the proportion of female teachers ranges from less than 15 per cent in Japan to over 40 per cent in Finland, France, Iceland, Ireland, New Zealand and the United States (Table D8.2). [p.406-07]*

² CMEC and Statistics Canada are studying this finding, which seems surprising on first glance.

Background Information

I. Organising Framework for the 2003 Edition of Education at a Glance [p.7]

Education at a Glance – OECD Indicators 2003 provides a rich, comparable and up-to-date array of indicators that reflect a consensus among professionals on how to measure the current state of education internationally. The indicators 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 indicators are organised thematically, and each is accompanied by relevant background information. The education indicators are presented within an organising framework which:

- distinguishes between the actors in education systems: individual learners, instructional settings and learning environments, educational service providers, and the education system as a whole;
- groups the indicators according to whether they speak to learning outcomes for individuals and countries, policy levers or circumstances that shape these outcomes, or to antecedents or constraints that set policy choices into context; and
- identifies the policy issues to which the indicators relate, with three major categories distinguishing between the quality of educational outcomes and educational provision, issues of equity in educational outcomes and educational opportunities, and the adequacy and effectiveness of resource management.

The following matrix describes the first two dimensions. References between the individual indicators and the cells in this matrix are provided in the section *Contents and Highlights* of this introduction.

	(1) Education and learning outputs and outcomes	(2) Policy levers and contexts shaping educational outcomes	(3) Antecedents or constraints that contextualise policy
(A) Individual participants in education and learning	(1.A) The quality and distribution of individual educational outcomes	(2.A) Individual attitudes, engagement, and behaviour	(3.A) Background characteristics of the individual learners
(B) Instructional settings	(1.B) The quality of instructional delivery	(2.B) Pedagogy and learning practices and classroom climate	(3.B) Student learning conditions and teacher working conditions
(C) Providers of educational services	(1.C) The output of educational institutions and institutional performance	(2.C) School environment and organisation	(3.C) Characteristics of the service providers and their communities
(D) The education system as a whole	(1.D) The overall performance of the education system	(2.D) System-wide institutional settings, resource allocations, and policies	(3.D) The national educational, social, economic, and demographic context

II. Contents and Highlights [p.8-25]

This section describes the contents of the volume and summarises key findings. It also highlights new features of this year's edition of *Education at a Glance* and relates the indicators to the organising framework described above.

Chapter A begins by examining graduation rates at the upper secondary level of education which is often considered the baseline qualification in modern societies (**Indicator A1**). The indicator speaks both to the current output of educational institutions (**Framework Cells 1.C and 1.D**). To gauge progress in educational output, current graduation rates are compared to the educational attainment of older persons who left the education system at different points in time.

The educational attainment of the adult population is not only a measure of the output of education systems, but adult qualifications also provide an important context for education systems (**Framework Cell 3.D**) as witnessed by the close interrelationships between student performance and parental levels of educational attainment (OECD, 2001). Finally, an analysis by gender provides an assessment of gender equity in upper secondary qualifications.

Indicators A2 and A3 on tertiary graduation and attainment extend the picture with an assessment of the supply of advanced skills in different fields of study (Framework Cells 1.C and 1.D). Attainment levels for different generations show how the supply of high skills qualifications has evolved and provides an important context for current educational policies (Framework Cell 3.D). *New:* For the first time, the indicator also provides trend data on tertiary attainment for the period 1999 to 2001. Finally, the indicator reviews countries' progress in closing the gender gap in tertiary attainment and graduation rates, both overall and across different fields of education.

Indicator A2 also compares drop-out rates which provide some indication of the internal efficiency of education systems (Framework Cell 1.C). Students leave educational programmes before their completion for many reasons - they realise that they have chosen the wrong subject or educational programme, they fail to meet the standards set by their educational institution, or they may want to work before completing their programme. Nevertheless, high dropout rates indicate that the education system is not meeting the needs of its clients. Students may find that the educational programmes do not meet their expectations or their needs in order to enter the labour market, or that the programmes require more time outside the labour market than they can justify.

Counting the numbers of graduates alone does not provide information about the quality of learning outcomes. To address this, Chapter A also compares the knowledge and skills attained by students across countries. *New:* **Indicator A4** has been newly introduced and assesses reading literacy skills of students around the age of 9 years.

While Indicator A4 looks at reading skills at the beginning of schooling, **Indicators A5 and A6** compare the reading, mathematics and science knowledge and skills of students at age 15, *i.e.* towards the end of their compulsory schooling period. These indicators are essential indicators for gauging the quality of educational performance as they assess to what extent societies have succeeded in equipping young adults with key foundation skills at an age when the transition to work is becoming a key concern for many. *New:* Interpreting Indicators A4 and A5 together provides some indication of the progress achieved by education systems between primary and secondary education.

Indicators A4, A5 and A6 not only benchmark the overall performance of countries (**Framework Cell 1.D**), but devote much attention also to the distribution of knowledge and skills in the student

population, with the aim to assess to what extent countries succeed in combining high overall performance with an equitable distribution of learning outcomes (**Framework Cell 1.A**).

Recognising the impact that education has on participation in labour markets, occupational mobility and the quality of life, policymakers and educators emphasise the importance of reducing educational differences between males and females. Significant progress has been achieved in reducing the gender gap in educational attainment (see Indicators A1 and A2), although in certain fields of study, such as mathematics and computer science, gender differences favouring males still exist (see Indicator A3).

As females have closed the gap and then surpassed males in many aspects of education, there are now many instances in which there is concern about the underachievement of males in certain areas, such as reading. Gender differences in student performance, as well as in attitudes toward and strategies for learning, therefore need to receive close attention from policymakers if greater gender equity in educational outcomes is to be achieved. Furthermore, students' perceptions of what occupations lie ahead for them can affect their academic decisions and performance. An important policy objective should therefore be to strengthen the role that the education system can play in moderating gender differences in occupational expectations to help reduce performance gaps in different subject areas. *New:* This indicator begins by examining data from OECD's PISA study on gender differences in the occupations which 15-year old students expect to have by the age of 30 and then the newly introduced **Indicator A11** examines gender differences in performance, attitudes, and learning strategies in primary and secondary schools (**Framework Cells 1.A and 2.A**).

Indicators A5 and A6 show that, in most countries, there are considerable differences in performance within each education system. This variation may reflect differences in school and student backgrounds, the human and financial resources available to schools, curricular differences, selection policies and practices, or the way that teaching is organised and delivered. Some countries have non-selective school systems that seek to provide all students with the same opportunities for learning, and allow each school to cater to all levels of student performance. Other countries respond to diversity explicitly by forming groups of students of similar performance levels through selection either within or between schools, with the aim of serving students according to their specific needs. Other countries combine the two approaches. Even in comprehensive school systems, schools may vary significantly in response to the socio-economic and cultural characteristics of the communities that they serve or their geography.

Indicator A7 sheds light on performance differences between schools (**Framework Cells 1.B and 1.C**) and some of the factors associated with these differences (**Framework Cells 3.A, 3.B and 3.C**).

It is well established that students who choose to spend a lot of time reading tend to be better readers than those who do not. However, in examining students' reading practices, it is important to consider not just the amount of time that students spend reading, but also how they invest this time. While some students may choose to read only one type of material (*e.g.*, magazines) frequently, others read a diversity of materials. Understanding what students read frequently and how these choices are related to reading performance can prompt educators and policymakers to devise early-intervention strategies to foster certain reading behaviours in order to promote literacy. *New:* To shed light on this, the newly introduced **Indicator A8** profiles students' reading practices according to the materials they read frequently and demonstrates the relationship between these profiles and their performance in reading literacy. *New:* Furthermore, the newly introduced **Indicator A9** takes this further to explore a broader concept of "engagement" in reading, which encompasses both reading practices and attitudes toward reading.

New: Finally, the newly introduced **Indicator A10** reports data on students' learning strategies, motivational preferences, self-related competencies, and learning preferences as important capacities of students to regulate their own learning. In societies that increasingly depend on the capacity and motivation of their citizens to continue learning throughout life, these capacities are an important outcome of education in themselves and may have an impact on students' success both in school and in their future lives. Indicators A8, A9 and A10 do not only reflect on learning activities and engagement as important outcomes of education (**Framework Cell 1.A**) but also as important policy levers that can help to both raise overall performance and counter social disadvantage (**Framework Cells 2.A and 2.B**).

As levels of skill tend to rise with educational attainment, the social 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. **Indicators A12** and **A13** examine the relationship between educational attainment and labour force activity, comparing rates of participation in the labour force first, and then rates of unemployment. Measuring the relationship between labour force activity and educational attainment, these are, firsthand foremost, indicators of the long-term outcomes of education systems (Framework Cell 1.D). The adequacy of workers' skills and the capacity of the labour market to supply jobs that match those skills are, however, also important contexts for national education policy making (Framework Cell 3.D). Unemployment rates can also influence student decisions to continue in education and therefore can shed light on differing participation rates in education across countries.

Markets also provide incentives to individuals to develop and maintain appropriate levels of skills through wage differentials, especially through higher earnings for persons completing additional education. Acquiring higher levels of education can also be viewed as an investment in human capital, which includes the stock of skills that individuals maintain or develop, through education or training and then offer, in return for earnings, on the labour market. The higher the earnings from increased human capital, the higher the returns on the investment and the premium paid for enhanced skills and/or higher productivity. **New: Indicator A14** and the newly introduced **Indicator A15** seek to measure the returns to education for individuals (**Framework Cell 1.A**), in terms of higher earnings; for taxpayers, in terms of higher fiscal income from better educated individuals; and for societies more generally (**Framework Cell 1.D**), in terms of the relationship between education and labour productivity. Together, these indicators shed light on the longer-term impact of education for individuals and societies. Indicator A14 also sheds light on an important national context (**Framework Cell 3.D**) for policy making and can influence public funding policies in general and policies on financial aid to students in particular. It can also provide context for individual students' decisions to engage in education at different levels (**Framework Cell 3.A**).

Financial resources are a central policy lever for improving educational outcomes. As an investment in human skills, education can help to foster economic growth and enhance productivity, contribute to personal and social development, and reduce social inequality. But like any investment, education needs to be financed. After Chapter A examined the returns to education, Chapter B provides a comparative examination of spending patterns in OECD countries. By giving more emphasis to trends in educational spending, the 2003 edition of *Education at a Glance 2003* seeks to analyse how different demand and supply factors interact and how spending on education, compared to spending on other social priorities, has changed.

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, however, can translate into higher costs per student, and must therefore be weighed

against undue burdens for taxpayers. No absolute standards exist for measuring the per student resources needed to ensure optimal returns for individual students or society as a whole. Nonetheless, international comparisons can provide a starting point for discussion by evaluating the variation that exists between OECD countries in educational investment. **Indicator B1** examines direct public and private expenditure on educational institutions in relation to the number of their full-time equivalent (FTE) students. It also reviews how OECD countries apportion per capita education expenditure between different levels of education.

Expenditure per student is a key policy measure which most directly impacts on the individual learner as it acts as a constraint on the learning environment in schools and student learning conditions in the classroom (**Framework Cells 2.A, 3.C and 3.B**).

However, relating Indicator B1 to Indicators A5 and A6 also shows, that lower expenditure cannot automatically be equated with a lower quality of educational services. Australia, Finland, Ireland, Korea and the United Kingdom, for example, which have moderate expenditure on education per student at primary and lower secondary levels, are among the OECD countries with the highest levels of performance by 15-year-old students in key subject areas.

Indicator B2 examines the proportion of national resources that goes to educational institutions and the levels of education to which they go. The proportion of national financial resources allocated to education is one of the key choices made by each OECD country; it is an aggregate choice made by governments, enterprises, and individual students and their families. Indicator B2 also shows how the amount of educational spending relative to the size of national wealth and in absolute terms has evolved over time in OECD countries. National resources devoted to education are a key national policy lever (**Framework Cell 2.D**) but also act as an antecedent to the activities of schools, classrooms and individual learners (**Framework Cells 3.C, 3.B and 3.A**).

Cost-sharing between the participants in education and society as a whole is an issue that is under discussion in many OECD countries. This is a particularly relevant question at the early and late stages of education - pre-primary and tertiary - where full or nearly full public funding is less common. As new client groups participate in education, the range of educational opportunities, programmes and providers is growing, and governments are forging new partnerships to mobilise the necessary resources. Public funding is now being looked upon increasingly as providing only a part, albeit a very substantial part, of the investment in education. Private funding is playing an increasingly important role.

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. However, in a fair number of OECD countries the public funds are then 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. To the extent that private financing of education creates barriers for the participation of learners from lower income groups, this may reflect in variation of performance between institutions (see also Indicator A7).

To shed light on these issues, **Indicator B3** examines the relative proportions of funds for educational institutions from public and private sources, and how these figures have evolved since 1995. As with Indicator B2, national resources devoted to education are a key national policy lever

(Framework Cell 2.D) as well as an antecedent to the activities of schools, classrooms and individual learners **(Framework Cells 3.C, 3.B and 3.A)**.

All governments are involved in education, funding or directing the provision of services. Since markets offer no guarantee of equal access to educational opportunities, governments fund educational services to ensure that they are within the reach of their populations. Public expenditure on education as a percentage of total public expenditure indicates the value of education relative to the value of other public investments such as health care, social security, defence and security.

Indicator B4 completes the picture of the volume of resources invested in education by examining changes in public spending on education in absolute terms and relative to changes in overall public spending.

Since 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. *New:* To portray this, a newly introduced feature of the indicator is to evaluate changes in educational expenditure in absolute terms and relative to changes in the size of public budgets.

Finally, the level of government that has responsibility for, and control over, the funding of education is often thought to have a strategic advantage in influencing decisions regarding educational governance. An important question in educational policy is, therefore, the extent to which the division of responsibility for educational funding between national, regional and local authorities translates into responsibility for educational decision-making. *New:* To shed light on this, a newly introduced feature of Indicator B4 is an examination of the source of public funds by level of government. Important decisions regarding educational funding are made both at the level of government where the funds originate and at the level of government by which they are finally spent or distributed. In illustrating each country's policy for centralization or decentralisation of funding, this indicator provides, along with other indicators, some context for the educational performance of the system as a whole.

As with Indicators B2 and B3, national resources devoted to education are a key national policy lever **(Framework Cell 2.D)** as well as an antecedent to the activities of schools, classrooms and individual learners **(Framework Cells 3.C, 3.B and 3.A)**.

The primary financing mechanism of education in most OECD countries remains direct spending on educational institutions. However, governments are looking increasingly towards greater diversity in financing instruments. Comparing these instruments helps to identify policy alternatives. Subsidies to students and their families, the subject of **Indicator B5**, constitute one such alternative to direct spending on institutions. They are used as incentives to engage individuals or groups of individuals in education or to open opportunities for them in different types of institutions **(Framework Cells 2.A and 2.C)**.

Governments subsidise the costs of education and related expenditure in order to increase access to education and reduce social inequalities. Furthermore, public subsidies play an important role in indirectly funding educational institutions. Channelling institutional funding through students may heighten institutional competition and therefore the efficiency of education funding. 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.

Public subsidies come in many forms: means-based subsidies, family allowances for all students, tax allowances for students or parents, or other household transfers. Should household subsidies take the form of grants or loans? Do loans effectively help increase the efficiency of financial resources invested in education and shift some of the costs to the beneficiaries? Or are student loans less appropriate than grants for encouraging low-income students to pursue their education? **Indicator B5** cannot answer these questions, but it does provide a useful overview of the subsidy policies being pursued in different OECD countries.

Chapter B concludes with an examination of how financial resources are invested and apportioned among resource categories (**Indicator B6**). The allocation of resources 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. A comparison of how OECD countries apportion their educational expenditure among resource categories can provide some insight into the differences in organizational structure and operation of educational institutions. Systemic budgetary and structural decisions on allocating resources eventually make themselves felt in the classroom; they affect teaching and the conditions under which teaching takes place. A system-wide description of decisions on how educational funding is spent which will influence system level outputs (**Framework Cell 2.D**).

A well-educated population has become a defining feature of a modern society. Education is seen as a mechanism for instilling civic values, and as a means for developing individuals' productive and social capacity. Early childhood programmes prepare young children socially and academically for primary education. Primary and secondary education provides basic skills that serve as a foundation for young people to become productive members of society. Tertiary education provides opportunities for acquiring advanced knowledge and skills, either immediately after initial schooling or later. Many employers encourage ongoing training, and assist workers in upgrading or re-orienting their skills to meet the demands of changing technologies. Chapter C sketches a comparative picture of access, participation and progression in education across OECD countries.

Virtually all young people in OECD countries can expect to go to school for 11 years. However, participation patterns and progression through education vary widely. Both the timing and participation rate in preschool 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 up to the late 20s.

Indicator C1 sheds light on these issues by portraying enrolment rates and the expected duration of schooling. It can help to elucidate the structure of education systems and access to educational opportunities in them. Enrolment patterns indicate overall outcomes of educational policy (**Framework Cell 1.D**) but, in the form of school expectancy, also outcomes at the individual level (**Framework Cell 1.A**).

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 further 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 OECD countries there are

also upper secondary programmes designed to prepare students for direct entry to the labour market. Enrolment in these different types of educational programmes is examined in **Indicator C2**.

Indicator C2 also sheds light on rates of entry to tertiary education, that provide an important indication of the degree to which a population is acquiring those high-level skills and knowledge that labour markets in knowledge societies value.

Like Indicator C1, Indicator C2 reflects on overall outcomes of educational policy (**Framework Cell 1.D**) as well as on outcomes at the individual level (**Framework Cell 1.A**).

Access to and participation in tertiary education is no longer limited to national boundaries. One way for students to expand their knowledge is to attend higher educational institutions in countries other than their own. Such international student mobility involves costs and benefits to students and institutions in sending and host countries alike. While the direct short-term monetary costs and benefits of this mobility are relatively easy to measure, the long-term social and economic benefits to students, institutions and countries are more difficult to quantify. The number of students studying in other countries (**Indicator C3**), however, provides some idea of the extent of student mobility.

The indicator reflects on students' motivation to study in other countries and hence raise their labour market prospects (**Framework Cell 2.A**) but is also indicative of the national policy on student mobility (**Framework Cell 2.D**). The policy itself is, of course, a condition under which students' mobility takes place (**Framework Cell 3.A**) and the extent of student mobility is a context for the learning environment in school and teaching and learning practices in the classroom (**Framework Cells 3.C and 3.B**).

All OECD countries are experiencing rapid social and economic changes that are making the transition to working life more uncertain. Entering the labour market is often a difficult period of transition. While the length of time spent in education has increased, a significant proportion of young people still remain marginal if they are neither in education or working, *i.e.*, they are either unemployed or in non-employment. **Indicators C4 and C5** examine the education and employment status of young men and women and provide information on how successfully the transition from school to work is made. Indicator C4 focuses on the combination of work and study and Indicator C5 on the work status young people who are no longer in education. Both indicators reflect outcomes not only for the individual student (**Framework Cell 1.A**) but also for the education system as whole as it interacts with the labour market (**Framework Cell 1.D**). They also provide a context for current participation rates and patterns both individually and collectively within the system (**Framework Cells 3.A and 3.D**).

Chapters A, B and C examined financial resources invested in education, patterns of participation, and the results of education in terms of student achievement and the labour market outcomes of education. Chapter D concludes the publication with an examination of student learning conditions, teacher working conditions in education systems and aspects of teacher demand and supply more generally.

How effectively learning time is used depends on how appropriate study programmes are, and on how much instruction time a student receives. Instruction time is a policy lever which acts most directly on the individual learner (**Framework Cell 2.A**) but also as a context for teaching and learning practices in the classroom and school (**Framework Cells 3.B and 3.C**).

Indicator D1 examines instruction time available for various study areas for students. *New:* A newly introduced feature of the indicator is the extension of the age range covered from 7 to 15 years.

The size of the learning group that shares teacher time is another variable that impacts on the use of classroom learning time. **Indicator D2** looks at the variation in average class size, and the ratio of students to teaching staff across OECD countries to estimate the human resources available for individual students. Both measures are factors which on the whole schools can influence (**Framework Cell 2.C**), though in some cases these can be constrained by system level policies. They are also important contexts which shape student learning (**Framework Cell 3.A**) and classroom instruction (**Framework Cell 3.B**). *New:* A newly introduced feature of the indicator is the examination of a wider range of categories of educational staff, including both pedagogical and other personnel.

In addition to classroom time and human resources, new technologies assume an increasingly important role in education. They not only equip students with important skills to participate effectively in the modern world, but also foster the development of self-regulated learning strategies and skills, as part of an essential foundation for lifelong learning. However, the mere presence of modern information and communication technology (ICT) in schools does not guarantee its effective use. *New:* The newly introduced **Indicator D3** presents information on the use of ICT in upper secondary schools and analyses some of the perceived obstacles to the effective integration of ICT in the learning process, including teachers' professional development in ICT. The availability of ICT in schools can strongly influence the school environment (**Framework Cell 2.C**) and sets a context in which instruction can be delivered (**Framework Cell 3.B**). The use of ICT in teaching and learning practices is also within the influence of instructional settings (**Framework Cell 2.B**) and shapes the learning environment for individual students (**Framework Cell 3.A**).

Among a wide range of factors influencing the quality of instruction are teachers' preparation for providing quality instruction. *New:* The newly introduced **Indicator D4** examines the qualification requirements for new teachers for pre-primary, primary, lower secondary and upper secondary education (general programmes) in the public sector as well as measures to support professional development. Where available, the percentage of the current stock of teachers with the required qualification level is also provided.

Levels of teacher qualifications influence the quality of teaching practice (**Framework Cell 2.B**) and act as an antecedent to the quality of instructional delivery and to student learning (**Framework Cells 3.B and 3.A**). Measures to support school policy in supporting professional development can also influence the learning environment in schools (**Framework Cell 2.C**) and act as antecedents to teaching and learning practices (**Framework Cell 3.B**).

Chapter D concludes with a comparative review of teachers' working conditions. Education systems employ a large number of professionals in increasingly competitive market conditions. Ensuring a sufficient number of skilled teachers is a key concern in all OECD countries. Key determinants of the supply of qualified teachers are the salaries and working conditions of teachers, including starting salaries and pay scales, and the costs incurred by individuals to become teachers, 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. Teacher compensation 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, the quantity of instruction time planned for students, and the designated number of teaching hours. To shed light on these issues, **Indicator D5** shows the starting, mid-career and maximum statutory salaries of teachers in public primary and secondary education, and incentive schemes and bonuses used in teacher rewards systems.

Together with class size and ratios of students to teaching staff (Indicator D2), hours of instruction for students (Indicator D1) and teachers' salaries (Indicator D5), the amount of time that teachers spend in the classroom teaching influences the financial resources which countries need to invest in education. While the number of teaching hours and the extent of non-teaching responsibilities are important parts of a teacher's working conditions, they also affect the attractiveness of the profession itself. To shed light on this, **Indicator D6** 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.

Teacher salaries and working hours not only impact on recruitment and retention of teachers within institutions (**Framework Cell 2.C**), but as a feature of teacher working conditions, they also provide a context to the quality of instruction in instructional settings and for the learning outcomes of individual learners (**Framework Cells 3.A and 3.B**).

Ensuring an adequate supply of qualified teachers is a major task school managers and school authorities are facing. On the system level, provisions for teacher training and teacher licensing, recruitment policies, statutory salary and bonus schemes, and statutory work conditions constitute the basic policy framework for teacher supply. At the local level, demand for and supply of teachers with specific subject matter expertise depends on a series of other factors as well. Local labour market conditions influence teachers' career decisions, *e.g.* industries competing for skills and expertise that teachers dispose of can play a role in the 'brain drain' from schools and conversely, the absence of other local labour opportunities may influence the choice of a teaching career. Teacher flow in a school may also depend on the age composition of the teaching staff, and on the social composition of the student population as well as on the school's working climate. *New:* The newly introduced **Indicator D7** provides general information on teacher supply and demand issues at the upper secondary level and, where there are shortages, how they are coped with at the level of schools (**Framework Cell 2.C**). These issues and the policies that they give rise to are also antecedents at school, class and student level (**Framework Cells 3.A, 3.B and 3.C**) as they will impact on the school learning environment, classroom climate and pupil engagement.

Finally, an important factor influencing teacher demand and supply is the age distribution of the teaching force. *New:* The newly introduced **Indicator D8** analyses the age and gender mix in countries' teaching force and thus reflects on a resource available system-wide (**Framework Cell 2.D**). The gender and age mix of the teaching force also represent antecedents at school, class and student level (**Framework Cells 3.A, 3.B and 3.C**) as they will impact on the school learning environment, classroom climate and pupil engagement.

III. Further Resources [p.25]

The web site www.oecd.org/edu/eag2003 provides a rich source of information on the methods employed for the calculation of the indicators, the interpretation of the indicators in the respective national contexts and the data sources involved. The web site also provides access to the data underlying the indicators.

The web site www.pisa.oecd.org provides information on the OECD Programme for International Student Assessment (PISA), on which many of the indicators in this publication draw.

Education Policy Analysis is a companion volume to *Education at a Glance*, which takes up selected themes of key importance for governments. The 2003 edition contains four chapters that draw together key findings and policy developments: Diversity, equity and inclusion; career guidance: new ways forward; changing patterns of governance in higher education; and strategies for sustainable investment in lifelong learning.