Education at a Glance 2008
OECD INDICATORS

Country Profile for Canada 2008

Council of Ministers of Education, Canada
Conseil des ministres de l'Éducation (Canada)

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OECD

The OECD is a unique forum where the governments of 30 democracies work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, **Canada**, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities takes part in the work of the OECD. OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members

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 2008, OECD Indicators* (EAG 2008). 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 2008 and has page (p.) references to the longer document. Please note that the EAG 2008 text has not been edited for this country profile. The comments in regular type relate to **Canada** but are derived from the tables and charts in EAG 2008.

The section entitled Background Information at the end of this document is drawn directly from the "Introduction" in EAG 2008 and is included here for the reader's convenience.

From the Editorial

*Meeting the demand while at least maintaining quality is bound to create pressures for current levels of spending to be maintained or increased and to improve the efficiency of spending on education. Recent years have already seen considerable rises in spending levels, both in absolute terms and as a share of public budgets. The total amount of funds allocated to educational institutions across all levels of education rose in all countries over the last decade, and by 19% on average between 2000 and 2005 alone (Indicator B3). By 2005, OECD countries were spending 6.1% of their collective GDP on education at all levels, of which 86% came from public sources and all but 7 of the 28 OECD countries spent at least 5% (Indicator B2). Another visible indication of the efforts made by governments can be found in the fact that from 1995 to 2005, public expenditure on education grew by more than one percentage point as a proportion of all public spending – from 11.9% to 13.2% in 2005. Education spending rose at least as fast as public spending in other sectors in all countries except **Canada**, France, Hungary, Portugal and Switzerland (Indicator B4).*

*So far, the Nordic countries have achieved expansion by providing massive public spending on tertiary education, including both support of institutions and support of students and households, as an investment that pays high dividends to individuals and society. Other countries such as Australia, **Canada**, Japan, Korea, New Zealand, the United Kingdom and the United States have expanded participation in tertiary education by shifting some of the financial burden to students and their families. In many of these countries, tuition fees are set by the institutions (often with a ceiling) and can vary according to students' labour market prospects and expected salary levels upon graduation (Indicator B5). These measures often go hand in hand with financial support to students from less advantaged backgrounds, in the form of loans and/or scholarships, as well as with loans on advantageous terms available to all students. Australia and New Zealand, for example, supplement income contingent loan schemes for tuition fees, which are available to all students, with means tested income support for living expenses and scholarships to assist with general education and accommodation costs that target lower socio-economic background students.*

Chapter A: The output of educational institutions and the impact of learning

Indicator A1: To what level have adults studied?

This indicator profiles the educational attainment of the adult population, as captured through formal educational qualifications. As such, it provides a proxy for the knowledge and skills available to national economies and societies. To have a better understanding of the demand for education, the distribution of occupations across OECD countries and the matching of tertiary-educated individuals to skilled jobs are also examined in this indicator. Data on attainment by fields of education and by age groups are used to examine the distribution of skills in the population and to furnish a rough measure of skills that have recently entered the labour market and of those that will be leaving the labour market in the coming years. (p. 28)

In almost all countries, 25-to-34-year-olds have higher tertiary attainment levels than the generation about to leave the labour market (55-to-64-year-olds). On average across OECD countries, 33% of the younger cohort has achieved a tertiary education, compared with 19% among the oldest cohort, while the average for the total population of 25-to-64-year-olds is 27%. The expansion of tertiary education differs substantially among countries. In France, Ireland, Japan and Korea, the difference in tertiary attainment between the oldest and youngest age groups is 25 percentage points or more (Table A1.3a).

*This rapid expansion has put Japan and Korea in the top group (Chart A1.3). Changes in attainment levels between the youngest and oldest cohorts have been negative in Germany, and expansion has only been a few percentage points in the Czech Republic, the United States and the partner countries Brazil and Estonia, although attainment levels in the total population are still substantially above the OECD average in the United States and Estonia. The highest tertiary attainment levels in the total population are found in **Canada** and in the partner country the Russian Federation where 47% and 54%, respectively, of the population have a tertiary qualification.* (p. 32)

*Four countries show little difference between the proportion of the population with tertiary attainment and the proportion of the population in skilled jobs. In **Canada** and the United States, the difference in tertiary attainment and skilled jobs is marginally negative and in Spain and the partner country Israel it is less than 5 percentage points. A close correspondence between tertiary attainment and skilled jobs suggests that individuals with tertiary education will find it more difficult to find skilled jobs at least until the growth in skilled occupations outpaces growth in attainment.* (p. 36)

There is a strong relationship between a large portion of tertiary 5A/6 educated individuals in skilled jobs and the difference between the proportions of skilled jobs and the tertiary educated in the economy. Close to 50% of the matching of individuals with

tertiary 5A/6 to skilled jobs is explained by differences in skilled jobs and tertiary education. Using a regression approach is also a way of levelling the playing field when evaluating countries' success in providing skilled jobs to highly educated individuals. Considering differences in supply and demand for skilled jobs, countries above the regression line match those with tertiary education to skilled jobs better and countries below the line do relatively worse in this respect. By this reasoning ***Canada*** *and the partner country Israel, which are below the OECD average of 85% of individuals with 5A/6 tertiary education in skilled jobs (Table A1.7), do relatively better than most countries when considering the proportion of tertiary educated individuals relative to skilled jobs in their economies. Given differences in the potential supply of and demand for high-end skills, those with tertiary education in Denmark, Finland, Luxembourg, and in the partner country Slovenia do substantially better in finding a skilled job. The opposite is true for those with a tertiary qualification in Italy, Turkey and the United States, where 8% or more end up outside skilled occupations than labour market conditions would suggest.* (p. 39)

Table A1.3a Population that has attained tertiary education (2006)
Total tertiary, 25 to 64

CAN	JPN	USA	NZL	DNK	FIN	OECD average
47%	40	39	38	35	35	27

(Top six countries, OECD average)

University (Tertiary-type A and Advanced research programmes), 25 to 64

USA	NOR	NLD	DNK	ISL	AUS, **CAN**	OECD average
35%	31	28	27	26	**24**	19

(Top six countries, OECD average)

Note: The data source for **Canada** (Labour Force Survey) does not allow for a clear delineation between "postsecondary non-tertiary education" and "tertiary-type B education". As a result, the figure reported for College (tertiary-type B) is inflated.

Indicator A2: How many students finish secondary education and access tertiary education?

This indicator shows the current upper secondary graduate output of education systems, i.e. the percentage of the typical population of upper secondary school age that follows and successfully completes upper secondary programmes. It also shows the percentage of the youth cohort that will enter different types of tertiary education during their lifetime. Finally, it sheds light on the distribution of new entrants at the tertiary level across fields of study as well as the relative share of females among new entrants. (p. 52)

Table A2.1 Upper secondary graduation rates (2006)

	DEU	GRC	FIN	KOR	JAP	NOR	**CAN**	USA	OECD average
M+F	103	100	95	93	93	91	**80**	77	83
M	102	96	91	92	92	80	**77**	75	79
F	104	104	100	94	93	103	**84**	79	87

(Top six countries, Canada, United States, OECD average)

Note: Data for **Canada** are for 2005.

Indicator A3: How many students finish tertiary education?

This indicator first shows the current tertiary graduate output of education systems, i.e. the percentage of the population in the typical age cohort for tertiary education that successfully completes tertiary programmes, as well as the distribution of tertiary graduates across fields of education. It then describes the evolution of the number of new entrants and graduates at tertiary-type A level over the last eleven years. Finally, it looks at the number of science graduates in relation to employed persons. The indicator also sheds light on the internal efficiency of tertiary educational systems. (p. 72)

*In Australia, Germany, Switzerland and the United Kingdom, more than 30% of tertiary-type A second degrees or advanced research degrees are awarded to international students. This pattern implies that the true domestic graduate output is significantly overestimated as a proportion of overall graduation rates. It is most significant for tertiary-type A second degree programmes in Australia and the United Kingdom and for advanced research programmes in Switzerland and the United Kingdom, where international graduates represent more than 35% of the graduate output. The contribution of international students to the graduate output is also significant – although to a lesser extent – in Austria, **Canada**, Japan, New Zealand and the United States. Among countries for which student mobility data are not available, the contribution of foreign students is significant in Belgium (Table A3.3 and Chart A3.4).* (p. 80)

In comparing graduation rates between countries for tertiary (university and college) education, it is important to note that, unlike some other countries, a significant portion of postsecondary students in **Canada** graduate from college programs. This means that comparisons of graduation rates for tertiary-type A (university) should be made with caution. Data for tertiary-type B (college) are not available for **Canada** for the time period covered by Indicator A3.

Table A3.6 Science graduates, by gender (2006), per 100,000 25-to-34-year-olds in employment

	FIN	AUS	KOR	POL	UKM	FRA	**CAN**	USA	OECD average
M+F	2289	2178	2042	2016	1974	1871	**1119**	1093	1340

(Top six countries, **Canada**, United States, OECD average)

Note: Data for **Canada** and France are for 2005.

Indicator A4: How many students complete and drop out of tertiary education?

Tertiary education covers a wide range of programmes, but serves overall as an indicator of countries' production of advanced skills. A traditional university degree is associated with completion of tertiary-type A courses; tertiary-type B generally refers to shorter and often vocationally oriented courses. This indicator shows current tertiary completion rates in education systems, i.e. the percentage of students who follow and successfully complete tertiary programmes. Although "dropping out" is not necessarily an indicator of failure from the perspective of the individual student, high dropout rates may indicate that the education system is not meeting students' needs. (p. 92)

*Full-time students have better chances of completing their course than do parttime students. On average in the ten countries for which data are available, 60% of part-time students completed at least a first tertiary-type A degree, while on average 68% of full-time students at this level graduate. The largest differences between full-time and part-time students are observed in **Canada** (Quebec) and New Zealand where completion rates for full-time students that enter tertiarytype A education are at least 25 percentage points higher than for students with part-time status.* (p. 93)

*Non-completion of a degree does not mean that the skills and competencies acquired will be lost and are not valued by the labour market. This is particularly the case in **Canada**, where one year of study can provide students attractive opportunities for employment on the labour market. This helps explain students' decisions to leave the education system before graduating. In Sweden, students can leave a tertiary-type A programme before completing it, enter the labour market and continue their studies later. They do not lose the benefit of the modules already completed.* (p. 93)

*There is no relationship observable between the charging of tuition fees and completion rates. In countries in which tuition fees charged by tertiary-type A educational institutions exceed USD 1 500 (Australia, **Canada**, the Netherlands, New Zealand, the United Kingdom and the United States), completion rates in tertiary-type A education are significantly lower than the OECD average in New Zealand and the United States but above 70% in the other countries. By contrast, the case of Denmark shows that no tuition fees and a high level of public subsidies available for students can lead to completion rates above the OECD average (81%).* (p. 93)

*Increasing tuition fees to improve completion rates in tertiary-type A education is often debated in OECD countries whose educational institutions charge low tuition fees. In fact, increasing the tuition fees charged by tertiary-type A institutions and exemption from tuition fees for academic merit are measures already used in some OECD countries to try to increase students' incentives to finish their studies quickly. However, it is difficult to see a relationship between completion rates in tertiary-type A programmes and the level of tuition fees charged by tertiarytype A institutions. The countries in which tuition fees charged by tertiary-type A educational institutions exceed USD 1 500 are Australia, **Canada**, the Netherlands, New Zealand, the United Kingdom and the United States. Completion rates are significantly lower than the OECD average (69%) in New Zealand and the United States but above 70% in the others. By way of contrast, Denmark does not charge tuition fees and provides a high level of public subsidies for students but has completion rates above the OECD average (81%). This is not surprising because all indicators on tertiary education and especially on rates of return show that compared to upper secondary attainment, tertiary-type A educational attainment significantly benefits individuals in terms of earnings and employment. This can create a sufficiently big incentive, independently of the level of tuition fees, for students to finish their studies (see Indicators A9, A10 and B5).* (p. 95)

*Second, in some countries not all courses offered in tertiary-type A education are followed to obtain a degree. For instance, an individual might attend courses in a given programme on a parttime basis for professional development, with no intention of completing the associated degree. Some other tertiary students (generally mature students) may also follow courses that are not part of a programme leading to a degree to increase their lifelong learning perspectives. On average for the ten OECD countries for which data are available, students enrolled in part-time studies represent 23% of total enrolment and exceed 40% in Hungary, New Zealand, Poland and the partner economy the Russian Federation. On average, 60% of part-time students who enter a tertiary-type A programme achieve at least a first degree at this level; the average completion rate for full-time students in tertiary-type A education is 68%. The largest differences between full-time and part-time students are observed in **Canada** (Quebec) and New Zealand, where completion rates for full time students in tertiary-type A education are at least 25 percentage points higher than for students with part-time status (Table A4.2). The large number of parttime students in New Zealand partially explains the high proportion of people leaving without qualifications: part-time students may enrol in a few modules (e.g. for vocational upskilling reasons) with no intention of completing all the courses required for the qualification (Table A4.2 and Chart A4.1).* (p. 96)

*Lastly, in some countries many students successfully complete some parts of a qualification but do not finish the whole programme. Non-completion of a degree does not mean that the acquired skills and competencies are lost and not valued by the labour market in these countries. In **Canada**, for example, one year of study can provide students attractive opportunities for employment. This may explain why students choose to leave the education system before graduating. In Sweden, students can leave a tertiary-type A programme before completing it, be employed for some time and later decide to continue their studies. They do not lose the benefit of the modules that they*

successfully completed in the past. In some other countries, students may successfully complete all modules they undertake, yet never enrol in enough modules to complete the qualification. For example, in New Zealand, where part-time study is more common, it is estimated that around one in five students complete all modules they enrol in, yet never enrol in enough modules to complete the qualification. (p. 96)

Note that data were collected for this indicator by OECD on a pilot basis. Comparable data are not available on a pan-Canadian basis, although individual jurisdictions may collect these data. The data shown for Quebec are intended only as an example for **Canada**. If this indicator continues to be reported in the future, data will be reported for **Canada** as a whole, if possible.

Indicator A5: What can 15-year-olds do in science?

This indicator examines the science performance of 15-year-old students, drawing on 2006 data from the OECD's Programme for International Student Assessment (PISA). It describes science proficiency in each country in terms of the percentage of students reaching one of six proficiency levels as well as in terms of the mean scores achieved by students on the overall science scale and on different aspects of science. It also examines the distribution of student scores within countries. (p. 100)

Finland, with an average of 563 score points, achieved the highest score and was statistically above the average scores of all other countries. Four other high-scoring countries had mean scores of 530 to 534 points: ***Canada****, Japan and New Zealand and the partner country Estonia. Eleven other countries (Australia, Austria, Belgium, the Czech Republic, Germany, Ireland, Korea, the Netherlands, Switzerland and the United Kingdom and the partner country Slovenia) also scored above the OECD average of 500 points. Five countries (Denmark, France, Hungary, Poland and Sweden) performed close to the OECD average, and the remaining 11 OECD countries and 4 partner countries performed below it.* (p. 100)

On average across OECD countries, 1.3% of 15-year-olds reached the highest level of science proficiency (Level 6 of the PISA 2006 science scale). In Finland and New Zealand this figure was at least 3.9%, three times the OECD average. In Australia, ***Canada****, Japan and the United Kingdom, as well as in the partner country Slovenia, between 2 and 3% reached Level 6.* (p. 101)

Four other high-scoring countries had mean scores of 530 to 534 points: ***Canada****, Japan and New Zealand and the partner country Estonia. Other countries scoring statistically significantly above the OECD average included Australia, Austria, Belgium, the Czech Republic, Germany, Ireland, Korea, the Netherlands, Switzerland and the United Kingdom and the partner country Slovenia.* (p. 102)

Examining individual countries' performance by proficiency level shows that in Finland and New Zealand at least 3.9% of students reached Level 6, the highest level on the PISA science scale, three times the OECD average. In Australia, ***Canada****, Japan and the*

United Kingdom and in the partner country Slovenia, between 2% and 3% reached Level 6. (p. 106)

*Including Level 5 brings the level of high performers to 9.0% on average across OECD countries. Over one in five students in Finland (20.9%) and over one in six in New Zealand (17.6%) reached at least Level 5. In, Australia, **Canada** and Japan the figure was between 14% and 16%. By contrast, two OECD countries and one partner country in the survey had less than 1% of students reaching either Level 5 or Level 6, and six OECD countries and three partner countries had 5% or fewer reaching the two highest levels. It appears that the pool of 15-year-olds who were highly proficient in science is very unevenly distributed across countries.* (p. 106)

Table A5.1 Mean score, variation and gender differences in student performance on the PISA science scale (2006)

FIN	**CAN**	JPN	NZL	AUS	KOR	USA	OECD average
563 (2.0)	**534 (2.)**	531 (3.4)	530 (2.7)	527 (2.3)	522 (3.4)	489 (4.2)	500 (0.5)

(Top six countries, United States, OECD average)

Note: the standard error is shown in parentheses.

Indicator A6: What are the parents' perceptions related to school and science learning?

As part of the PISA 2006 assessment, ten OECD countries complemented the perspectives of students and school principals with data collected from the students' parents. These data provide important insights into parents' perceptions of their child's school and instructional quality and how such perceptions relate both to student performance and to the impact which social background has on learning outcomes. (p. 120)

No data for **Canada** are included in this indicator.

Indicator A7: Does their parents' socio-economic status affect students' participation in higher education?

This indicator examines the socio-economic status of students enrolled in higher education, an important gauge of access to higher education for all. Internationally comparable data on the socio-economic status of students in higher education are not widely available. This indicator is a first attempt to illustrate the analytical potential that better data on this issue would offer. It takes a close look at data from ten OECD countries, examining the occupational status (white-collar or blue-collar) of students' fathers and the fathers' educational background, along with data from the OECD Programme for International Student Assessment (PISA) 2000 survey. (p. 136)

No data for **Canada** are included in this indicator.

Indicator A8: How does participation in education affect participation in the labour market?

This indicator examines the relationships between educational attainment and labour force status, for both males and females, and considers changes over time. It also focuses on employment rates among those nearing retirement age to shed some light on the employment of an ageing population and the links with educational attainment. (p. 142)

Table A8.2a Unemployment rates and educational attainment, by gender (2006)

	CAN	FRA	GER	ITA	JPN	UKM	USA	OECD average
All levels, M	**5.4**	6.6	9.9	4.3	4.1	4.1	4.3	4.9
All levels, F	**5.2**	8.2	10.0	7.4	3.7	3.6	3.8	6.1
Tert. A, M	**3.7**	5.5	4.4	3.8	2.7	2.3	2.6	3.1
Tert. A, F	**3.9**	5.7	5.1	5.9	2.5	2.1	2.2	3.9

(G7 countries, OECD average)

Indicator A9: What are the economic benefits of education?

This indicator examines the relative earnings of workers with different levels of educational attainment in 25 OECD countries and the partner countries Israel and Slovenia. It also presents data on the distribution of pre-tax earnings at five ISCED levels of educational attainment to help show how returns to education vary within countries among individuals with comparable levels of educational attainment. (p. 162)

*Although education generally leads to substantial earnings advantages, this is not the case for all individuals. The share of individuals with tertiary education who earn substantially less than the median varies among countries; this is typically explained by part-time or part-year work but nevertheless may send the wrong signal from an educational perspective. Females with tertiary education are more disadvantaged than males in terms of realising low earnings; in Austria, **Canada** and New Zealand, 20% or more of the female population earn less than half the median. While males are less likely to have low earnings, more than 10% earn less than half of the median in **Canada**, Denmark, Norway and Sweden. This dispersion in educational outcomes provides an indication of the overall investment risk associated with higher education.* (p. 162)

There are significant differences among countries in the dispersion of earnings among individuals with similar levels of educational attainment. The proportion of individuals

*with tertiary-type A and advanced research programmes in the lowest earnings category (at or below half of the median) varies from 0% in Luxembourg and Portugal to 18% in **Canada**. Countries also differ in the shares of males and females in the upper and lower categories of earnings.* (p. 163)

*Males with a degree from a tertiary-type A or advanced research programme have a substantial earnings premium in the Czech Republic, Hungary and Poland that is close to or more than 100%. In Korea and United Kingdom females have a similar advantage. Females with below secondary education are particularly disadvantaged in **Canada**, Israel, Turkey, the United Kingdom and the United States, as are males in Portugal and the United States. Table A9.1a shows that the earnings premium for 25-to-64-year-olds with tertiary education, relative to those with upper secondary education, ranges from 15% in New Zealand to 119% in Hungary.* (p. 166)

*Table A9.1a also shows how relative earnings vary with age. The difference in relative earnings for those with a tertiary education at age 55 to 64 compared with the total population (25-64- year-olds) is generally larger; on average, the earnings differential increases with 14 index points. These benefits of education are shown in Chart A9.3. While employment opportunities at an older age improve for those with tertiary education in most countries (see Indicator A8), the earnings advantages also increase. In all countries except Australia, **Canada**, the Netherlands, Turkey and the United Kingdom. Earnings increase for 55-to-64-year-olds is more frequent for those with tertiary education than for those with below upper secondary education.* (p. 166)

*For 25-to-64-year-olds, financial rewards from tertiary education benefit females more than males in Australia, Austria, **Canada**, Korea, the Netherlands, New Zealand, Norway, Spain, Switzerland and the United Kingdom. The reverse is true in the remaining countries, with the exception of Turkey, where – relative to upper secondary education – the earnings of males and females are equally enhanced by tertiary education (Table A9.1a).* (p. 166)

*Table A9.4a and Chart A9.5 show that in most countries the share of individuals in the lowest earnings categories falls as the level of educational attainment rises. This result is another way of viewing the well-established positive relationship between earnings and educational attainment. Nonetheless, individuals with higher levels of education are still found in the lower earnings categories in most countries; this suggests that there is a substantial risk associated with investing in tertiary education. The proportion of individuals with the highest educational attainment (tertiary-type A and advanced research programmes) in the lowest earnings category (at or below half of the median) varies from 0% in Luxembourg and Portugal to 18% in **Canada**.* (p. 169)

*Earnings data in Table A9.1a are based on an annual reference period in Austria, **Canada**, the Czech Republic, Denmark, Finland, Ireland, Italy, Korea, Luxembourg, Norway, Portugal, Spain, Sweden, Turkey and the United States. Earnings are reported weekly in Australia, New Zealand and the United Kingdom, and monthly in Belgium, France, Germany, Hungary, Poland and Switzerland, and the partner country Israel.*

Data on earnings are before income tax, while earnings for Belgium, Korea and Turkey are net of income tax. Data on earnings for individuals in part-time work are excluded for the Czech Republic, Hungary, Luxembourg and Poland, while data on part-year earnings are excluded for Hungary, Luxembourg and Poland. (p. 171)

Table A9.1a Relative earnings of the population with income from employment (2006 or latest available year) (upper secondary and post-secondary non-tertiary education = 100), ages 25 to 64, all tertiary education

	CAN	FRA	GER	ITA	JAP	UKM	USA
Year	**2005**	2006	2006	2004		2006	2006
M	**140**	157	163	188	m	149	183
F	**144**	146	153	138	m	177	170
M+F	**138**	149	164	165	m	159	176

(G7 countries)

Table A9.1b Differences in earnings between females and males (2006 or latest available year), average annual earnings of females as a percentage of earnings of males by level of educational attainment of 30-to-44-year-olds

	CAN	FRA	GER	ITA	JAP	UKM	USA
Year	**2005**	2006	2006	2004		2006	2006
Upper secondary	**61**	73	61	73	m	53	65
Tert. B	**59**	77	53	m	m	56	67
Tert. A	**68**	66	63	57	m	64	59
All levels	**64**	73	59	73	m	58	65

(G7 countries)

Indicator A10: What are the incentives to invest in education?

This indicator examines incentives to invest in education by estimating the rate of return to education. The financial returns to education are calculated for investments undertaken as a part of initial education, as well as for a hypothetical 40-year-old who decides to return to education in mid-career. Private and public returns to education are given for upper secondary and tertiary education. (p. 182)

*There is generally a trade-off between taxes and the direct costs of education (tuition fees). Countries with low or no tuition fees typically let individuals pay back public subsidies later in life through progressive tax schemes. In countries in which a larger portion of the investment falls on the individual (in the form of tuition fees) a larger portion of the earnings differential is also accrued by the individual. Therefore, the stakes are higher in **Canada**, Korea and the United States, where tuition fees represent a large proportion of the investment cost. There is no straightforward link between tuition*

fees and rates of returns to education, which indicates that supply of and demand for tertiary-educated individuals is the main determinant. (p. 187)

*The rewards for investing in tertiary education at age 40 are generally higher than for upper secondary education (Table A10.4). Only in **Canada**, Denmark and New Zealand are the returns for males and females below 4.5%. If foregone earnings are compensated by a public subsidy of 50%, returns improve everywhere to above 8%, except for females in **Canada**. Females are typically disadvantaged in the labour market in terms of employment owing, among other things, to cultural differences and child-rearing responsibilities. In some cases, this leaves females with an outdated stock of human capital because of labour market interruptions.* (p. 189)

*Chart A10.3 provides the financial incentives for females to return to upper secondary and to tertiary education for three and four years, respectively. As for males, the returns to a tertiary degree are generally higher in most countries. With few exceptions, they exceed 5% even if the individual foregoes all earnings. In **Canada**, Denmark, New Zealand, Sweden and the United States, the returns are less attractive, but in most countries they are substantial enough to motivate an investment in the absence of any government intervention.* (p. 189)

Chapter B: Financial and human resources invested in education

Indicator B1: How much is spent per student?

This indicator provides an assessment of the investment in each student. Expenditure on educational institutions per student is largely influenced by teachers' salaries (see Indicators B6 and D3), pension systems, instructional and teaching hours (see Indicators B7, D1 and D4), teaching materials and facilities, the programme orientation provided to pupils/students (see Indicator C1) and the number of students enrolled in the education system (see Indicator C2). Policies to attract new teachers or to reduce average class size or staffing patterns (see Indicator D2) have also contributed to changes in expenditure on educational institutions per student over time. (p. 202)

Excluding R&D activities and ancillary services, expenditure on educational core services in tertiary institutions represents on average USD 7 976 per student and ranges from USD 5 000 or less in Greece, Hungary, Poland, the Slovak Republic and the partner country Estonia to more than USD 10 000 in ***Canada****, Switzerland and the United States.* (p. 203)

Even if overall spending per student is similar in some OECD countries, the ways in which resources are allocated among the different levels of education vary widely. OECD countries as a whole spend USD 6 173 per student at the primary level, USD 7 736 at the secondary level and USD 15 559 at the tertiary level. At the tertiary level, the totals are affected by high expenditure in a few large OECD countries, most notably ***Canada*** *and the United States. Spending on educational institutions per student in a typical OECD country (as represented by the simple mean across all OECD countries) amounts to USD 6 252 at the primary level, USD 7 804 at the secondary level and USD 11 512 at the tertiary level (Table B1.1a and Chart B1.2).* (p. 205)

These averages mask a broad range of expenditure on educational institutions per student by OECD and partner countries. At the primary level, expenditure on educational institutions varies by a factor of 10, ranging from USD 1 425 per student in the partner country Brazil to USD 14 079 in Luxembourg. Differences among countries are even greater at the secondary level, where spending on educational institutions per student varies by a factor of 16, from USD 1 186 in the partner country Brazil to USD 18 845 in Luxembourg. Expenditure on educational institutions per tertiary student ranges from USD 3 421 in the partner country the Russian Federation to more than USD 20 000 in ***Canada****, Switzerland and the United States (Table B1.1a and Chart B1.2).* (p. 205)

Greater differences are observed in the proportion of total expenditure on educational institutions per student devoted to core services at the tertiary level partly because R&D expenditure can account for a significant proportion of educational spending. The OECD countries in which most R&D is performed by tertiary education institutions tend to report higher expenditure per student than those in which a large proportion of R&D is performed in other public institutions or by industry. Excluding R&D activities and

*ancillary services, expenditure on core educational services in tertiary institutions represents, on average, USD 7 976 per student and ranges from USD 5 000 or less in Greece, Hungary, Poland, the Slovak Republic and the partner country Estonia to more than USD 10 000 in **Canada**, Switzerland and the United States (Table B1.1b).* (p. 207)

*On average, expenditure on R&D and ancillary services at the tertiary level represents respectively 29 and 4% of all tertiary expenditure on educational institutions per student. In 9 out of 28 OECD and partner countries for which data on tertiary expenditure are available for every service category – Belgium, Finland, Germany, Italy, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom – expenditure on R&D and ancillary services in tertiary institutions represents more than 32% of total tertiary expenditure on educational institutions per student. On a per student basis this can translate into significant amounts: in Australia, **Canada**, Germany, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom and the United States, expenditure for R&D and ancillary services amounts to more than USD 5 000 per student (Table B1.1b).* (p. 207)

*Expenditure on educational institutions per student averages 21% of GDP per capita at the primary level, 26% at the secondary level and 40% at the tertiary level (Table B1.4). Countries with low levels of expenditure on educational institutions per student may nevertheless show distributions of investment relative to GDP per capita which are similar to those of countries with a high level of spending per student. For example, Korea and Portugal – countries with expenditure on educational institutions per student at primary, secondary and post-secondary non-tertiary level of education and GDP per capita below the OECD average – spend more per student relative to GDP per capita than the OECD average. Similarly, **Canada**, Mexico, Switzerland and the United States and the partner country Chile spend more than 50% of GDP per capita on each tertiary student, among the highest proportions after Brazil. Brazil has the highest proportion, spending 108% of GDP per capita on each tertiary student, but tertiary students represent only 3% of the students enrolled in all levels of education combined in Brazil (Tables B1.2 and B1.4).* (p. 211)

*There is more variation in spending on educational institutions per student at the tertiary level, and the relationship between countries' relative wealth and their expenditure levels is more variable. **Canada**, Iceland and Switzerland, for example, have similar levels of GDP per capita but very different levels of spending on tertiary education. The proportion of GDP per capita spent per tertiary student in **Canada** and Switzerland is 61% and is among the highest among OECD countries, while for Iceland (at 27%) the proportion is significantly below the OECD average (Table B1.4 and Chart B1.6).* (p. 211)

Across **Canada**, the transition between elementary and secondary education occurs at different grades in different areas. Accordingly, in table B1.1a, **Canada** reports all spending at the elementary-secondary level combined in the column for "All secondary

education". Direct comparison with other countries should not be made, because they report elementary and secondary spending separately.

Table B1.1b Annual expenditure per student on core services, ancillary services and R&D (2005), Primary, secondary and post-secondary non-tertiary education and Tertiary education

	CHE	NOR	USA	AUT	DNK	ISL	**CAN**	OECD average
P, S, P	10,721	9,975	9,769	9,436	8,997	8,815	**7,837**	7,065
Tert.	21,734	15,552	24,370	14,775	14,959	9,474	**20,156**	11,512

(Top six countries, **Canada**, OECD average)

Note: Data for **Canada** are for 2004.

Indicator B2: What proportion of national wealth is spent on education?

Expenditure on educational institutions as a percentage of GDP shows how a country prioritises education in relation to its overall allocation of resources. Tuition fees and investment in education from private entities other than households (see Indicator B5) have a strong impact on differences in the overall amount of financial resources that OECD countries devote to their education systems, especially at the tertiary level. (p. 226)

*Tertiary education accounts for nearly one-third of the combined OECD expenditure on educational institutions (2.0% of the combined GDP). In **Canada** and the United States expenditure at this level reaches up to 40% of expenditure on educational institutions.* (p. 227)

***Canada**, Korea and the United States spend between 2.4 and 2.9% of their GDP on tertiary institutions. Korea, the United States, and the partner country Chile (1.8%) show the highest proportions of private expenditure at the tertiary level. Relative to GDP, the United States spends over three times more on tertiary education than Italy and the Slovak Republic and nearly four times more than the partner countries Brazil and the Russian Federation.* (p. 227)

*Nearly one-third of combined OECD expenditure on educational institutions is accounted for by tertiary education. At this level, the pathways available to students, the duration of programmes and the organisation of teaching vary greatly among OECD countries, resulting in significant differences in the expenditure allocated to tertiary education. On the one hand, **Canada**, Korea and the United States spend between 2.4 and 2.9% of their GDP on tertiary institutions. Except for **Canada**, these countries and the partner country Chile are also those with the highest proportion of private expenditure on tertiary education. Denmark and Finland as well as the partner countries Chile and Israel, also show high levels of spending, with 1.7% or more of GDP going to tertiary institutions. On the other hand, the proportion of GDP spent on tertiary institutions in Belgium,*

France, Iceland, Mexico, Portugal, Switzerland and the United Kingdom is below the OECD average; these countries are among the OECD countries in which the proportion of GDP spent on primary, secondary and post-secondary non-tertiary education is above the OECD average (Chart B2.2). In Switzerland, a moderate proportion of GDP spent on tertiary institutions translates to one of the highest levels of spending per tertiary student, owing to comparatively low tertiary enrolment rates and high GDP (Tables B2.1 and B1.1a). (p. 229)

*The differences are partly related to the variation of the school-age population, but a sound interpretation should also take account of the trends in national income. For example, in Ireland, spending on all levels of education combined increased by more than 80% between 1995 and 2005, but GDP more than doubled (Table B2.3). On average in the 28 countries for which data are available for 1995 and 2005, expenditure for all levels of education combined increased relatively more than GDP did. The increase in expenditure on educational institutions as a proportion of GDP exceeded 0.8 percentage points over the period in Denmark (6.2% to 7.4%), Greece (2.6% to 4.2%), Mexico (5.6% to 6.5%) and the United Kingdom (5.2% to 6.2%). However, the increase in spending on educational institutions tended to lag behind the growth in national income in more than one-third of the 28 OECD and partner countries for which data are available. The most notable differences are in Austria, **Canada**, France, Ireland and Spain, and in partner country Estonia where the proportion of GDP spent on educational institutions decreased by 0.5 percentage point or more between 1995 and 2005 (Table B2.1), mainly as a result of the decrease in expenditure on educational institutions as a percentage of GDP at the primary, secondary and post-secondary non-tertiary levels.* (p. 231)

*In two-thirds of the 28 OECD and partner countries for which data are available, expenditure on educational institutions for tertiary education between 1995 and 2005 increased proportionately more than for primary, secondary and post-secondary non-tertiary education. This is certainly associated to some extent with the significant increase in tertiary students compared to the relative stability in the number of students at lower levels (Table B1.5). In **Canada**, the Czech Republic, Greece, Italy, Poland, Portugal, the Slovak Republic, Spain, Switzerland and the United States, increases in spending on tertiary education surpassed increases at the primary, secondary and postsecondary non-tertiary levels by 30 percentage points or more. Ireland, Sweden and the partner countries Chile and Estonia invested additional resources in similar proportions in primary, secondary and post-secondary non-tertiary and tertiary education combined. Conversely, Australia, Denmark, Finland, the Netherlands, New Zealand, Norway, and the United Kingdom and the partner country Brazil invested most of the increases (in relative terms) in primary, secondary and post-secondary non-tertiary education (Table B2.3).* (p. 231)

Comparing expenditure on educational institutions as a percentage of GDP with the proportion of the population enrolled in education shows in general that seven of the ten countries with over 25% of their population enrolled in formal education (Belgium, Denmark, Iceland, Mexico, New Zealand and the United Kingdom and the partner

*country Israel) are also those with expenditure on educational institutions as a percentage of GDP above the OECD average (Chart B2.4). In contrast, Austria, **Canada**, Greece, Hungary, Italy, Japan, Portugal, Spain and Switzerland, and the partner country the Russian Federation, have the lowest proportions of the population (less than 20%) enrolled in formal education, and except for **Canada** and Switzerland, they also have expenditure on educational institutions below the OECD average. Some of these countries also have the lowest shares of GDP devoted to education among OECD and partner countries.* (p. 235)

Table B2.1 Expenditure on educational institutions as a percentage of GDP , by level of education (2005), Total, all levels of education

CAN	FRA	GER	ITA	JAP	UKM	USA	OECD average
6.2	6.0	5.1	4.7	4.9	6.2	7.1	5.8

(G7 countries, OECD average)

Note: Data for **Canada** are for 2004.

Indicator B3: How much public and private investment is there in education?

This indicator examines the proportion of public and private funding allocated to educational institutions for each level of education. It also breaks down private funding between household expenditure and expenditure from private entities other than households. It sheds some light on the widely debated issue of how the financing of educational institutions should be shared between public entities and private ones, particularly those at the tertiary level. (p. 242)

*On average, over 90% of primary, secondary and post-secondary non-tertiary education in OECD countries, and never less than 80% (except in Korea and in the partner country Chile), is paid for publicly. However, in tertiary education the proportion funded privately varies widely, from less than 5% in Denmark, Finland and Greece, to more than 40% in Australia, **Canada**, Japan, New Zealand and the United States and in the partner country Israel, and to over 75% in Korea and the partner country Chile. As with tertiary graduation and entry rates, the proportion of private funding can be influenced by the incidence of international students which form a relatively high proportion in Australia and New Zealand.* (p. 242)

*In tertiary education, households account for most private expenditure in most countries for which data are available. Exceptions are **Canada**, Greece, Hungary, the Slovak Republic and Sweden where private expenditure from entities other than households is more significant.* (p. 243)

In all OECD countries for which comparable data are available, private funding on educational institutions represents around 14% of all funds on average. This proportion

*varies widely among countries and only ten OECD countries and two partner countries report a share of private funding above the OECD average. Nevertheless, in Australia and **Canada**, as well as in the partner country Israel, private funds constitute around one-quarter of all educational expenditure. They exceed 30% in Japan, Korea and the United States and the partner country Chile (Table B3.1).* (p. 245)

*Nevertheless, private funding exceeds 10% in Australia, **Canada**, the Czech Republic, Germany, Korea, Mexico, New Zealand, the Slovak Republic, Switzerland and the United Kingdom, and the partner country Chile (Table B3.2a and Chart B3.2). The importance of public funding may reflect the fact that primary, secondary and post-secondary non-tertiary education are usually perceived as a public good with mainly public returns. At these levels in most countries, the largest share of private expenditure is household expenditure and goes mainly towards tuition. In Germany and Switzerland, however, most private expenditure is accounted for by contributions from the business sector to the dual system of apprenticeship at the upper secondary and postsecondary non-tertiary levels.* (p. 247)

*Between 2000 and 2005, 14 out of the 28 OECD and partner countries for which comparable data are available showed a small decrease in the share of public funding at primary, secondary and post-secondary non-tertiary levels. Among these countries, the increase in the private share is 2 percentage points or more in **Canada** (7.6 to 10.1%), Korea (19.2 to 23.0%), Mexico (13.9 to 17.1%), the Slovak Republic (2.4 to 13.8%), Switzerland (10.8 to 13.0%) and the United Kingdom (11.3 to 17.0%), as well as in the partner country Israel (5.9 to 8.0%). Funding shifts in the opposite direction, towards public funding, are evident in the other 14 countries; however, the share of public funding increased by 2 percentage points or more only in Hungary (from 92.7 to 95.5%) and Poland (95.4 to 98.2%) (Chart B3.3 and Table B3.2a).* (p. 247)

*The proportion of expenditure on tertiary institutions covered by individuals, businesses and other private sources, including subsidised private payments, ranges from less than 5% in Denmark, Finland and Greece, to more than 40% in Australia, **Canada**, Japan, New Zealand and the United States and the partner country Israel and to over 75% in Korea and the partner country Chile (Chart B3.2 and Table B3.2b). In Korea, around 80% of tertiary students are enrolled in private universities, where more than 70% of budgets derive from tuition fees. The contribution of private entities other than households to the financing of educational institutions is on average higher for tertiary education than for other levels of education.* (p. 247)

*In one-third of OECD and partner countries – Australia, **Canada**, Hungary, Italy, Japan, Korea, the Netherlands, the Slovak Republic, Sweden and the United States, and the partner country Israel – the proportion of expenditure on tertiary institutions covered by private entities other than households represents 10% or more.* (p. 249)

Table B3.1 Relative proportions of public and private expenditure on educational institutions for all levels of education (2005)

	KOR	USA	JPN	AUS	**CAN**	NZL	OECD average
Public	58.9	67.3	68.6	73.4	**75.5**	78.4	85.5
Private	41.1	32.7	31.4	26.6	**24.5**	21.6	14.5

(Top six countries by private expenditure, OECD average)

Note: Data for **Canada** are for 2004.

Indicator B4: What is the total public spending on education?

Public expenditure on education as a percentage of total public expenditure indicates the value placed on education relative to other public investments such as health care, social security, defence and security. It provides an important context for the other indicators on expenditure, particularly for Indicator B3 (the public and private shares of educational expenditure) and is the quantification of an important policy lever in its own right. (p. 256)

*In OECD countries, public funding of primary, secondary and post-secondary non-tertiary education is on average about three times that of tertiary education, mainly due to largely universal enrolment rates but also because the private share tends to be greater at the tertiary level. This ratio varies from less than double in **Canada**, Finland, Greece and Norway to more than five times in Korea and the partner country Chile. The latter figure is indicative of the relatively high proportion of private funds that go to tertiary education in these two countries.* (p. 257)

*The public-sector proportion of funding of the different levels of education varies widely among OECD countries. In 2005, OECD countries and partner countries allocated between 5.9% (the Russian Federation) and 16.2% (Mexico) of total public expenditure to primary, secondary and postsecondary non-tertiary education, and between 1.6% (Italy and Japan) and 4.8% (New Zealand) on tertiary education. On average in OECD countries, public funding of primary, secondary and post-secondary non-tertiary education is nearly three times that of tertiary education, mainly owing to enrolment rates (see Indicator C2) and the demographic structure of the population or because the private share in expenditure tends to be higher at the tertiary level. This ratio varies by country from two times in **Canada**, Finland, Greece and Norway to more than five times in Korea and the partner country Chile. The latter figure is indicative of the relatively high proportion of private funds that goes to tertiary education in Korea and the partner country Chile (Table B4.1).* (p. 259)

Table B4.1 Total public expenditure on education (2005),

Public expenditure on education as a percentage of total public expenditure, all levels of education combined

MEX	SVK	NZL	ISL	DEN	KOR	USA	**CAN**	OECD average
23.4	19.5	19.4	18.0	15.5	15.3	13.7	**12.3**	13.2

(Top six countries, **Canada**, United States, OECD average)

Public expenditure on education as a percentage of GDP, all levels of education combined

DMK	ISL	NOR, SWE	FIN	NZL	BEL	USA	**CAN**	OECD average
8.3	7.6	7.0	6.3	6.2	6.0	5.1	**4.9**	5.4

(Top six countries, Canada, United States, OECD average)

Note: Data for **Canada** are for 2004.

Indicator B5: How much do tertiary students pay and what public subsidies do they receive?

This indicator examines the relationships between annual tuition fees charged by institutions, direct and indirect public spending on educational institutions, and public subsidies to households for student living costs. It looks at whether financial subsidies for households are provided in the form of grants or loans and raises related questions: Are scholarships/grants and loans more appropriate in countries with higher tuition fees charged by institutions? Are loans an effective means for helping to increase the efficiency of financial resources invested in education and shift some of the cost of education to the beneficiaries of educational investment? Are student loans less appropriate than grants in encouraging low-income students to pursue their education? (p. 264)

*Except for Belgium, countries with quite a large difference between the fees charged for the first and last deciles of students – Australia, **Canada** and the United States and the partner country Chile – are also those with quite high levels of average tuition fees. The difference is partly because tertiary educational institutions in these countries have the right to differentiate the fees charged by field of education.* (p. 267)

*Tuition fees charged in tertiary-type A institutions may vary within each country for national students as a result of choices made by tertiary institutions. In Austria, there is no variation in the amount of tuition fees among national students, but in Belgium (Fr. community), **Canada** and the United States, and the partner country Chile, the tuition fees charged for the 10% of students with the highest fees (90th) is at least twice the level of tuition fees charged to the 10% students with the lowest fees (10th). The ratio between fees charged for these two deciles is highest in Italy at 4:1. Except for Belgium, countries with quite a large difference between the tuition fees charged for the first and last deciles*

*of students – Australia, **Canada** and the United States and the partner country Chile – are also those with quite high levels of average tuition fees. The difference is mainly due to the fact that tertiary institutions in these countries have the right to differentiate the fees charged by field of education. On the contrary, in Spain, average tuition fees are moderate (around USD 800) and the fees charged vary by a ratio of less than 1.6 (Table B5.1c).* (p. 267)

*The tuition fees charged by public educational institutions may differ among students enrolled in the same programme. Several countries make a distinction in terms of students' citizenship. In Austria, for example, the average tuition fees charged by public institutions for students who are not citizens of EU or EEA countries are twice the fees charged for citizens of these countries. This kind of differentiation also appears in Australia, Belgium, **Canada**, the Czech Republic, the Netherlands, New Zealand, Turkey, the United Kingdom and the United States, as well as the partner country Estonia (see Indicator C3), and appeared in Denmark from the 2006/07 academic year. In these countries, the variation in tuition fees based on citizenship is always significant. This type of policy differentiation may check the flows of international students (see Indicator C3) unless these students receive some financial support from their country of citizenship (or from their country of permanent residence as in New Zealand).* (p. 268)

*A second group includes four Anglophone countries (Australia, New Zealand, the United Kingdom and the United States), one bilingual country (**Canada**), the Netherlands and the partner country Chile, which have potentially high financial barriers for entry to tertiarytype A education, but also large public subsidies to students. It is noteworthy that the average entry rate to tertiary-type A education for this group of countries is, at 67%, slightly above the OECD average and higher than most countries (except the Nordic countries) with low levels of tuition fees.* (p. 273)

*Tuition fees charged by tertiary-type A institutions exceed USD 1 500 in all these countries and more than 80% of tertiary-type A students receive public subsidies (in Australia, the Netherlands and the United States, the three countries for which data are available, see Tables B5.1a and B5.1c). Student support systems are well developed and mostly accommodate the needs of the entire student population with a proportion of public subsidies in total public expenditure on tertiary education higher than the OECD average (18%) in six out of the seven countries: Australia (32%), the Netherlands (28%), New Zealand (42%), the United Kingdom (26%) and the United States (24%) and the partner country Chile (40%) and nearly at the average for **Canada** (Table B5.2). Countries in this group do not have lower access to tertiarytype A education than countries from the other groups. For example, Australia (82%) and New Zealand (79%) have among the highest entry rates to tertiary-type A education, the Netherlands (59%) and the United States (64%) are above the OECD average (55%) in 2005, and the United Kingdom (51%) and the partner country Chile (48%) are just below the OECD average, although entry to tertiary-type A education in these countries increased by 4 and 6 percentage points, respectively, between 2000 and 2005 (Table A2.5). Finally, these countries spend more per tertiary student on core services than the OECD average and have a relatively high level of tax revenue based on income as a percentage of GDP*

compared to the OECD average. The Netherlands is an exception in terms of the level of taxation on income and the partner country Chile for both indicators (see Table B1.1b and OECD [2006]). (p. 273)

Chart B5.2 presents the proportion of public educational expenditure dedicated to loans, grants and scholarships, and other subsidies to households at the tertiary level. Grants and scholarships include family allowances and other specific subsidies, but exclude tax reductions that are part of the subsidy system in Australia, Belgium (Fl. community), ***Canada****, the Czech Republic, Finland, France, Hungary, Italy, the Netherlands, Norway, the Slovak Republic, Switzerland and the United States (see Chart B5.3 in Education at a Glance 2006, [OECD, 2006b]). Around one-half of the 31 reporting OECD countries and partner countries rely exclusively on scholarships/grants and transfers/payments to other private entities. The remaining OECD countries provide both scholarships/grants and loans to students (except Iceland, which relies only on student loans) and both subsidies are particularly developed in Australia, the Netherlands, New Zealand, Norway, Sweden, the United Kingdom, the United States and the partner country Chile. In general, the highest subsidies to students are provided by the countries that offer student loans; in most cases these countries also spend an above-average proportion of their budgets on grants and scholarships alone (Chart B5.2 and Table B5.2). Some other countries – Belgium (Fl. community), Finland and the partner country Estonia – do not have public loan systems but private loans that are guaranteed by the state (Table B5.1e).* (p. 276)

The financial help arising from reduced interest rates on public or private loans is twofold: there may be a difference between the interest rates supported by students during and after their studies. Comparing interest rates among countries is quite difficult as the structure of interest rates (public and private) is not known and can vary significantly among countries, so that a given interest rate may be considered high in one country and low in another. However, the difference in rates during and after studies seems to aim at lowering the charge on the loan during the student's studies. For example, in ***Canada****, Iceland, New Zealand and Norway, there is no nominal interest rate on the public loan during the period of studies but after their studies, students/graduates have an interest rate related to the cost of government borrowing or to a higher rate. For example, New Zealand charges no interest to full-time students and lowincome borrowers and during 2005 made loans interest-free for borrowers while they reside in New Zealand. Nevertheless, there is no systematic difference between interest rates during and after studies, and Belgium, the Netherlands, Sweden, the United Kingdom, the United States and the partner country Estonia do not differentiate between the interest rate borne by student during and after their studies. In Australia, a real interest rate is not charged on loans. Instead, the part of a loan which has remained unpaid for 11 months or more is indexed to ensure that the real value of the loan is maintained (Table B5.1e).* (p. 277)

Table B5.1a Estimated annual average tuition fees charged by tertiary-type A educational institutions for national students (academic year 2004/05), annual average tuition fees in USD charged by institutions (for full-time students), public institutions

USA	JPN	KOR	AUS	**CAN**	NZL
5027	3920	3883	3855	**3464**	2671

(Top six countries)

Indicator B6: On what resources and services is education funding spent?

This indicator compares OECD countries with respect to the division of spending between current and capital expenditure and the distribution of current expenditure. It is affected by teachers' salaries (see Indicator D3), pension systems, the age distribution of teachers, the size of the non-teaching staff employed in education (see Indicator D2 in Education at a Glance 2005) and the degree to which expanded enrolments require the construction of new buildings. It also compares how OECD countries' spending is distributed among the different functions of educational institutions. (p. 292)

*Austria, Belgium, **Canada**, Finland, France, Germany, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom, and the partner country Israel, imply that spending on educational institutions per student in these countries would be considerably lower if the R&D component were excluded (Table B1.1b).* (p. 295)

Table B6.2b Expenditure on educational institutions by resource category and level of education (2005)

Primary, secondary and post-secondary non-tertiary education

	LUX	KOR	GRC	NOR	USA	JPN	**CAN**	OECD average
Current	79.0	84.1	85.1	88.1	88.8	90.1	**95.0**	91.8
Capital	21.0	15.9	14.9	12.0	11.2	9.9	**5.0**	8.2

(Top six countries by capital expenditure, **Canada**, OECD average)

Tertiary education

	GRC	ESP	CZE	KOR	USA	JPN	**CAN**	OECD average
Current	65.8	83.2	81.9	85.7	87.3	87.4	**95.9**	90.4
Capital	34.2	16.8	15.2	14.3	12.7	12.6	**4.1**	9.5

(Top six countries by capital expenditure, **Canada**, OECD average)

Note: Data for **Canada** are for 2004.

Indicator B7: How efficiently are resources used in education?

This indicator examines the relationship between resources invested and outcomes achieved in upper secondary education in OECD countries and thus raises questions about the efficiency of education systems. (p. 304)

Among the 30 OECD countries, ***Canada*** *was excluded from the analysis because of the amount of missing data for the reference year. Four other countries (Belgium, Greece, Spain and the United Kingdom) were also excluded as data on expenditure per student were not available separately for upper secondary level of education (but only for total secondary level of education) (see Annex 3).* (p. 315)

Chapter C: Access to education, participation and progression

Indicator C1: How prevalent are vocational programmes?

This indicator shows the participation of students in vocational education and training (VET) at the upper secondary level and the distribution of upper secondary and post-secondary non-tertiary vocational graduates across fields of education. It compares the levels of educational expenditure per student for general programmes and VET at the upper secondary level. It also compares educational outcomes of 15-year-old students enrolled in general and in vocational education. (p. 322)

*For 13 OECD countries and the partner country Slovenia for which data is available, the majority of upper secondary students pursue pre-vocational and vocational programmes. In most OECD countries with dual-system apprenticeship programmes (Austria, Germany, Luxembourg, the Netherlands and Switzerland) and in Australia, Belgium, the Czech Republic, Finland, Italy, Norway, the Slovak Republic and Sweden, and the partner country Slovenia, 55% or more of upper secondary students are enrolled in pre-vocational or vocational programmes. However, in **Canada**, Greece, Hungary, Iceland, Ireland, Japan, Korea, Mexico, Portugal and Turkey, and the partner countries Brazil, Chile, Estonia and Israel, 60% or more of upper secondary students are enrolled in general programmes even though pre-vocational and/or vocational programmes are offered (Table C1.1).* (p. 325)

*Upper secondary students in many education systems can enrol in vocational programmes, but some OECD countries delay vocational training until after graduation from upper secondary education. While vocational programmes are offered as advanced upper secondary programmes in some OECD countries (e.g. Austria, Hungary and Spain), similar programmes are offered as post-secondary education in others (e.g. **Canada** and the United States).* (p. 325)

*The minimum entry requirement for apprenticeship programmes varies but is typically the completion of lower secondary education (**Canada**, the Czech Republic, Denmark, Finland, France, Germany, Ireland, Luxembourg, Mexico, the Netherlands, Norway, Poland and the Slovak Republic, and the partner countries Israel and Slovenia). In Austria, the minimum entry requirement is the completion of nine years of compulsory schooling. In Australia, Belgium, the Netherlands, the United Kingdom and the United States, entry is governed (in full or in part) by age criteria, while in New Zealand, participants must be employed. In Turkey, the minimum requirement is completion of primary education, but entrants must be at least 14 years old and have a contract with a workplace. The Russian Federation has no legal framework for entry into apprenticeship programmes.* (p. 326)

*In some countries the duration of apprenticeship programmes is standardised; it ranges from one to four years in **Canada**, the Czech Republic, Denmark, France, Germany, Ireland, New Zealand, Norway, Poland and the United Kingdom, and the partner countries Israel and Slovenia. In other countries (e.g. Austria and Belgium), it varies*

according to subject, specific qualification sought, previous knowledge and/or experience. (p. 326)

Indicator C2: Who participates in education?

This indicator examines access to education and its evolution using information on enrolment rates and on enrolment trends from 1995 to 2006. It also shows patterns of participation at the secondary level of education and the percentage of the youth cohort that will enter different types of tertiary education during their lifetime. Participation rates reflect both the accessibility of tertiary education and the perceived value of attending tertiary programmes. For information on vocational education and training in secondary education, see Indicator C1. (p. 336)

*There has been an average increase of 8 percentage points in the proportion of 15-to-19-yearolds enrolled in education in OECD countries between 1995 and 2006. Enrolment rates for this age group increased on average from 74 to 81% from 1995 to 2006 and reached more than 90% in 2006 in Belgium, Greece, Poland and the partner country Slovenia (Belgium had already reached 90% or more in 1995) (Table C2.2). However, while enrolment rates for 15-to-19-year-olds have improved by more than 20 percentage points during the past 11 years in the Czech Republic, Greece and Hungary, they remained virtually unchanged in Australia, Belgium, **Canada**, France, Germany, Luxembourg, the Netherlands, Norway and Switzerland. Of these, all except Luxembourg have a high proportion of their population of 15-to-19-year-olds enrolled in education (Table C2.2).* (p. 340)

Upper secondary students in many education systems can enrol in relatively short programmes (less than two years) to prepare for a certain trade or specific vocational field. Some OECD countries delay vocational training until after graduation from upper secondary education. While these programmes are offered as advanced upper secondary programmes in some OECD countries (e.g. Austria, Hungary and Spain), they are offered as post-secondary education in others (e.g. Canada and the United States), although the latter often resemble upper secondary level programmes. (p. 340)

Table C2.1 Enrolment rates, by age (2006), students aged 20 to 29 as a percentage of the population aged 20 to 29

FIN	DNK	ISL	SWE	AUS	GRC	**CAN**	USA	OECD average
42.9	37.8	37.2	36.1	33.2	32.0	**26.0**	23.1	25.1

(Top six countries, Canada, United States, OECD average)

Note: Data for Canada are for 2005.

Indicator C3: Who studies abroad and where?

This indicator provides a picture of student mobility and of the internationalisation of tertiary education in OECD and partner countries. It shows global trends and highlights the main destinations of international students and trends in market shares of the international student pool. Some of the factors underlying students' choice of country of study are also examined. It shows the extent of student mobility to different destinations and presents international student intake in terms of the distribution by countries and regions of origin, types of programmes, and fields of education. The distribution of students enrolled outside of their country of citizenship by destination is also examined, along with the immigration implications for host countries. The proportion of international students in tertiary enrolments provides a good indication of the magnitude of student mobility in different countries. (p. 348)

*International students make up 15% or more of the enrolments in tertiary education in Australia and New Zealand. International students make up more than 20% of enrolments in advanced research programmes in Belgium, **Canada**, New Zealand, Switzerland, the United Kingdom and the United States.* (p. 349)

*In 2006, five out of ten foreign students went to the four countries that host the majority of foreign students enrolled outside of their country of citizenship. The United States received the most (in absolute terms) with 20% of all foreign students worldwide, followed by the United Kingdom (11%), Germany (9%) and France (8%). Altogether, these destinations account for 49% of all tertiary students pursuing their studies abroad (Chart C3.2). Besides these four major destinations, significant numbers of foreign students were enrolled in Australia (6%), **Canada** (5%), Japan (4%) and New Zealand (2%), and in the partner country the Russian Federation (3%), in 2006.* (p. 354)

*The dominance (in absolute numbers) of English-speaking destinations (Australia, **Canada**, New Zealand, the United Kingdom and the United States) may be largely due to the fact that students intending to study abroad are likely to have learned English in their home country and/or wish to improve their English language skills through immersion and study abroad. The rapid increase in foreign enrolments in Australia (index change of 175), **Canada** (157) and, most importantly, New Zealand (825) between 2000 and 2006 can be partly attributed to linguistic considerations (Table C3.1).* (p. 355)

*In recent years, several OECD countries have softened their immigration policies to encourage the temporary or permanent immigration of their international students. Australia, **Canada** and New Zealand, for example, make it easy for foreign students who have studied in their universities to settle by granting them additional points for their immigration file. This makes these countries more attractive to students and strengthens their knowledge economy. As a result, immigration considerations may also affect some international students' choice between alternative educational opportunities abroad. In addition, the total freedom of movement of workers within Europe explains part of the high level of student mobility in Europe compared to that between the countries of North*

America, as the North America Free Trade Agreement (NAFTA) does not include the free movement of workers within a common labour market. (p. 357)

*In Australia, Austria, the Czech Republic, the Slovak Republic and Sweden, the proportions of international students are roughly the same in tertiary-type A and advanced research programmes, an indication that these countries of destination are successful at attracting students from abroad from the start of their tertiary education and keeping or attracting them beyond their first degrees. In contrast, other countries display significantly higher incoming student mobility relative to total enrolments in advanced research programmes than in tertiary-type A programmes. This pattern is clear in Belgium, **Canada**, Finland, Hungary, Japan, New Zealand, Norway, Spain, Switzerland, the United Kingdom and the United States, and in the partner country Slovenia, as well as in France, Iceland, Italy, Korea, Poland and Turkey, countries for which data on student mobility are not available. It may reflect the attractiveness of advanced research programmes in these countries or a preference for recruitment of international students at higher levels of education to capitalise on their contribution to domestic research and development or in anticipation of their subsequent recruitment as highly qualified immigrants.* (p. 358)

*The predominance of students from Asia and Europe is also clear when looking at individual countries of origin. Students from France, Germany, Japan and Korea represent the largest groups of international students enrolled in OECD countries, at 2.2%, 2.8%, 2.4% and 4.1% of the total respectively, followed by students from **Canada** and the United States at 1.7% and 1.8%, respectively (Table C3.2).* (p. 359)

*In other countries, a large proportion of their international students enrol in advanced research programmes. This is particularly true in Spain (36.0%) and Switzerland (27.3%). Such patterns suggest that these countries offer attractive advanced programmes to prospective international graduate students. This concentration can also be observed – to a more limited extent – in **Canada** (9.8%), Finland (14.3%), Japan (10.1%), the United Kingdom (11.6%) and the United States (15.7%). Among countries for which data on student mobility are not available, foreign enrolments in advanced research programmes constitute a large group of foreign students in France (10.1%). All of these countries are likely to benefit from the contribution of these highlevel international students to domestic research and development. In addition, this specialisation can also generate higher tuition revenue per international student in the countries charging full tuition costs to foreign students (Box C3.3).* (p. 359)

*As shown in Table C3.5, sciences attract about one in six international students in Germany (17.1%), New Zealand (17.4%), Switzerland (16.6%) and the United States (18.7%), but fewer than one in fifty in Japan (1.3%). However, the picture changes slightly when agriculture, engineering, manufacturing and construction programmes are included among scientific disciplines. Finland receives 41.9% of its international students in these fields. The proportion of international students enrolled in agriculture, sciences or engineering is also high in **Canada** (29.0 %), Germany (38.3%), Hungary (30.2%), Sweden (39.6%), Switzerland (34.2%), the United Kingdom (29.8%) and the*

United States (34.6%). Similarly, among countries for which data on student mobility are not available, agriculture, sciences and engineering attract at least 27% of foreign students in France (27.0%), Portugal (27.2%) and the Slovak Republic (28.3%). In contrast, few foreign students are enrolled in agriculture, sciences and engineering in Poland (Chart C3.4). (p. 360)

*Language considerations, geographic proximity and similarity of education systems are all important determinants of the choice of destination. Geographic considerations and differences in entry requirements are likely explanations of the concentration of students from Austria in Germany, from Belgium in France and the Netherlands, from France in Belgium, from **Canada** in the United States, from New Zealand in Australia, from China in Japan, etc. Language issues as well as academic traditions also shed light on the propensity for anglophone students to concentrate in other countries of the Commonwealth or in the United States, even those that are geographically distant. Migration networks also play a role, as illustrated by the concentration of students with Portuguese citizenship in France, students from Turkey in Germany or from Mexico in the United States.* (p. 362)

*The table (C3.2) shows for each country the proportion of country of origin. When data on student mobility are not available, the table shows the proportion of foreign students in tertiary education that have citizenship of a given country of origin. Reading the third column: 1.4% of international tertiary students in **Canada** are German residents, 0.1% of international tertiary students in **Canada** are Greek residents, etc. Reading the sixth column: 5.6% of international tertiary students in Ireland had their prior education in Germany, 0.5% of international tertiary students in Ireland had their prior education in Greece, etc. Reading the 15th column: 25.9% of foreign tertiary students in Austria are German citizens, 0.6% of foreign tertiary students in Austria are Greek citizens, etc.* (p. 367)

Note that the total proportion of foreign students in Canada is underestimated because of the lack of data for the college sector.

Table C3.1 Student mobility and foreign students in tertiary education (2006), foreign students as a percentage of all tertiary enrolment, tertiary-type A programmes

NZL	AUS	UKM	CHE	AUT	**CAN**	USA	OECD average
28.3	23.0	18.4	17.0	16.9	**13.8**	m	8.5

(Top six countries, United States, OECD average)

Note: Data for Canada are for 2005.

Indicator C4: How successful are students in moving from education to work?

This indicator shows the number of years that young adults are expected to spend in education, employment and non-employment and examines their education and

employment status by gender. During the past decade, individuals have spent more time in initial education, delaying their entry into the workforce. Part of this additional time is spent combining work and education, a practice that is widespread in some countries. Once students have completed their initial education, access to the labour market is often impeded by periods of unemployment or nonemployment, although males and females are affected differently. This indicator is based on the current situation of persons between the ages of 15 and 29 and gives a picture of major trends in the transition from school to work. (p. 374)

Males and females differ very little in terms of the expected number of years in unemployment, even though expected periods of unemployment tend to be marginally longer for males (0.9 for males, 0.7 for females). While the situation is similar for both in many countries, females appear to be at a particular advantage in ***Canada****, Germany, the Slovak Republic, Turkey and the United Kingdom. Periods of unemployment for females exceed those for males in Denmark, Greece, Portugal, Spain and the partner country Slovenia (Table C4.1a).* (p. 378)

Whereas young males can expect to spend 1.6 years neither in education nor in employment between the ages of 15 and 29, the average figure for females is 2.7 years. In the Czech Republic, Hungary, Mexico, the Slovak Republic and Turkey, there is a much stronger tendency for young females to leave the labour market and to spend time out of the educational system and not working. In Austria, Belgium, ***Canada****, Denmark, Finland, Japan, the Netherlands, Norway, Sweden and Switzerland, young males and young females do not differ by more than half a year in this measure. Conversely, relative to males, females between the ages of 15 and 29 in all OECD countries can expect a shorter duration of employment after education; this is partly a consequence of the time spent in education, but is also attributable to other factors such as time spent in child-bearing and child-rearing (Table C4.1a).* (p. 379)

Work-study programmes combine work and education as part of an integrated, formal education or training activity, such as the dual system in Germany; apprentissage or formation en alternance in France and Belgium; internship or co-operative education in ***Canada****; and apprenticeship in Ireland. Vocational education and training take place both in school settings and working environments. Students or trainees can be paid or not, usually depending on the type of job and the course or training.* (p. 383)

Table C4.3 Percentage of the cohort population not in education and unemployed (2006), tertiary education, ages 25 to 29

	CAN	FRA	GER	ITA	JAP	UKM	USA	OECD average
Males	**4.1**	5.8	5.3	12.1	m	3.5	2.2	5.5
Females	**3.1**	4.2	4.5	10.3	m	2.1	1.7	5.1
M+F	**3.5**	4.9	4.8	11.0	m	2.7	1.9	4.9

(G7 countries, OECD average)

Indicator C5: Do adults participate in training and education at work?

This indicator examines the participation of the adult population in non-formal jobrelated education and training in terms of the expected number of hours of such education and training. It focuses particularly on the time a hypothetical individual is expected to spend in such education and training over a typical working life (of 40 years) and the intensity of this education and training towards the end of the working life. (p. 398)

There is substantial cross-country variation in participation in non-formal job-related continuing education and training. Four OECD countries – Denmark, Finland, Sweden and the United States – take the lead, with more than 35% of 25-to-64-year-olds having participated in some type of non-formal job-related continuing education and training over the previous 12 months. The participation rate is less than 10% in Greece, Hungary, Italy, the Netherlands, Poland, Portugal and Spain. Between these two extremes, participation in education and training varies greatly; it is about 11% in the Czech Republic and Ireland but over twice that in ***Canada*** *and the United Kingdom (Table C5.1a).* (p. 400)

Data for non-European countries were calculated from country-specific household surveys (see Annex 3 at www.oecd.org/edu/eag2008). Data for countries in the European statistical system come from the European Labour Force Survey ad hoc module "Lifelong Learning 2003". The reference period of the LLL ad hoc module was the whole of 2003 in some countries, for some it was Q2 (April-June) and for others it was Spring (March-May). For most European countries, data on training hours in job-related activities are available for up to the three most recent non-formal learning activities. Data for ***Canada*** *cover up to five job-related training activities per participant. Data for the United States cover up to four job-related training activities per participant.* (p. 405)

Table C5.1a Participation rate and expected number of hours in non-formal job-related education and training, by level of educational attainment (2003)

Participation rate during one year

	SWE	DNK	USA	FIN	CHE	UKM	**CAN**	OECD average
M+F	40	39	37	36	29	27	**25**	18
Males	39	39	37	33	33	28	**25**	19
Females	42	39	39	39	36	26	**25**	17

(Top six countries, Canada, OECD average)

Note: Data for Canada are for 2002.

Chapter D: The learning environment and organisation of schools

Indicator D1: How much time do students spend in the classroom?

This indicator examines the amount of instruction time students are expected to receive between the ages of 7 and 15. It also discusses the relationship between instruction time and student learning outcomes. (p. 412)

No data for **Canada** are included in this indicator.

Indicator D2: What is the student-teacher ratio and how big are classes?

This indicator examines the number of students per class at the primary and lower secondary levels and the ratio of students to teaching staff at all levels; it distinguishes between public and private institutions. Class size and student-teacher ratios are much discussed aspects of the education students receive and – along with students' total instruction time (see Indicator D1), teachers' average working time (see Indicator D4) and the division of teachers' time between teaching and other duties – are among the determinants of the size of countries' teaching force. (p. 424)

Indicator D3: How much are teachers paid?

This indicator shows the starting, mid-career and maximum statutory salaries of teachers in public primary and secondary education, and various additional payments and incentive schemes used to reward teachers. Together with teachers' working and teaching time (see Indicator D4), this indicator presents some key measures of teachers' working lives. Differences in teachers' salaries, along with other factors such as student-to-staff ratios (see Indicator D2), provide some explanation of the differences in expenditure per student (see Indicators B1 and B7). (p. 440)

No data for **Canada** are included in this indicator.

Indicator D4: How much time do teachers spend teaching?

This indicator focuses on the statutory working time and statutory teaching time of teachers at different levels of education. Although working time and teaching time only partly determine teachers' actual workload, they do give valuable insight into differences in what is demanded of teachers in different countries. Together with teachers' salaries (see Indicator D3) and average class size (see Indicator D2), this indicator presents some key measures of the working lives of teachers. (p. 458)

No data for **Canada** are included in this indicator.

Indicator D5: How are evaluations and assessments used in education systems?

This indicator focuses on evaluation and accountability arrangements for lower secondary public schools. It examines the existence and use of student and school performance and evaluation information. It complements the quantitative information relating to teachers' salaries and working and teaching time (Indicators D3 and D4), instruction time of students (Indicator D1), and the relationship between numbers of students and of teachers (Indicator D2) by providing qualitative information on the type and use of particular school accountability and evaluation arrangements. It also complements the information relating to levels of decision making (Indicator D6). New information is provided about the criteria used for school evaluations and how various performance measures are used in different education systems. (p. 468)

Indicator D6: What is the level of decision making in education systems?

This indicator shows where decisions are made in public institutions at the lower secondary level of education. The level of decision making (from central or state levels to school levels) is presented over all, as well as for different domains. The level of decision making for different aspects of the curriculum is also examined and complemented by the mode of decision making at school level, in general as well as in specific domains. (p. 482)

No data for **Canada** are included in this indicator.

Background information

The organising framework

Education at a Glance – OECD Indicators 2008 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 information on the policy context and the interpretation of the data. The education indicators are presented within an organising framework that:

• 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 or 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:

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

The following sections discuss the matrix dimensions in more detail:

Actors in education systems

The OECD indicators of education systems (INES) programme seeks to gauge the performance of national education systems as a whole, rather than to compare individual institutional or other sub-national entities. However, there is increasing recognition that many important features of the development, functioning and impact of education systems can only be assessed through an understanding of learning outcomes and their relationships to inputs and processes at the level of individuals and institutions. To account for this, the indicator framework distinguishes between a macro level, two meso-levels and a micro-level of education systems. These relate to:

• The education system as a whole;
• The educational institutions and providers of educational services;
• The instructional setting and the learning environment within the institutions; and
• The individual participants in education and learning.

To some extent, these levels correspond to the entities from which data are being collected but their importance mainly centres on the fact that many features of the education system play out quite differently at various levels of the system, which needs to be taken into account when interpreting the indicators. For example, at the level of students within a classroom, the relationship between student achievement and class size may be negative if students in small classes benefit from improved contact with teachers. At the class or school level, however, students are often intentionally grouped such that weaker or disadvantaged students are placed in smaller classes so that they receive more individual attention. At the school level, therefore, the observed relationship between class size and student achievement is often positive (suggesting that students in larger classes perform better than students in smaller classes). At higher aggregated levels of education systems, the relationship between student achievement and class size is further confounded, *e.g.* by the socio-economic intake of schools, or by factors relating to the learning culture in different countries. Past analyses, which have relied on macro-level data alone, have therefore sometimes led to misleading conclusions.

Outcomes, policy levers and antecedents

The second dimension in the organising framework further groups the indicators at each of the above levels:

• Indicators on observed outputs of education systems, as well as indicators related to the impact of knowledge and skills for individuals, societies and economies, are grouped under the subheading *output and outcomes of education and learning;*
• The sub-heading *policy levers and contexts* groups activities seeking information on the policy levers or circumstances which shape the outputs and outcomes at each level; and
• These policy levers and contexts typically have *antecedents* – factors that define or constrain policy.

These are represented by the sub-heading *antecedents and constraints*. It should be noted

that the antecedents or constraints are usually specific for a given level of the education system and that antecedents at a lower level of the system may well be policy levers at a higher level. For teachers and students in a school, for example, teacher qualifications are a given constraint while, at the level of the education system, professional development of teachers is a key policy lever.

Policy issues

Each of the resulting cells in the framework can then be used to address a variety of issues from different policy perspectives. For the purpose of this framework, policy perspectives are grouped into three classes that constitute the third dimension in the organising framework for INES:

• Quality of educational outcomes and educational provision;
• Equality of educational outcomes and equity in educational opportunities; and
• Adequacy, effectiveness and efficiency of resource management.

In addition to the dimensions mentioned above, the time perspective as a fourth dimension in the framework allows dynamic aspects in the development of education systems to be modelled also. The indicators that are published in *Education at a Glance 2008* fit within this framework, though often they speak to more than one cell.

Most of the indicators in **Chapter A** *The output of educational institutions and the impact of learning* relate to the first column of the matrix describing outputs and outcomes of education. Even so, indicators in **Chapter A** measuring educational attainment for different generations, for instance, not only give a measure of the output of the educational system, but also provide context for current educational policies, helping to shape polices on, for example, lifelong learning.

Chapter B *Financial and human resources invested in education* provides indicators that are either policy levers or antecedents to policy, or sometimes both. For example, 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.

Chapter C *Access to education, participation and progression* provides indicators that are a mixture of outcome indicators, policy levers and context indicators. Entry rates and progression rates are, for instance, outcomes measures to the extent that they indicate the results of policies and practices in the classroom, school and system levels. But they can also provide contexts for establishing policy by identifying areas where policy intervention is necessary to, for instance, address issues of inequity.

Chapter D *The learning environment and organisation of schools* provides indicators on instruction time, teachers' working time and teachers' salaries not only represent policy levers which can be manipulated but also provide contexts for the quality of instruction in instructional settings and for the outcomes of learners at the individual level.