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# INTRODUCTION

## ORGANISING FRAMEWORK FOR THE 2003 EDITION OF EDUCATION AT A GLANCE

*Education at a Glance – OECD Indicators 2003* provides a rich, comparable and up-to-date array of indicators that reflect a consensus among professionals on how to measure the current state of education internationally. The indicators provide information on the human and financial resources invested in education, on how education and learning systems operate and evolve, and on the returns to educational investments. The indicators are organised thematically, and each is accompanied by relevant background information. The education indicators are presented within an organising framework which:

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

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

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

## CONTENTS AND HIGHLIGHTS

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

*Chapter A examines the outcomes of education and learning, in terms of...*

*...the current output of educational institutions and the educational attainment of the adult population,...*

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

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

- In 15 out of 17 OECD countries for which comparable data are available, the ratio of upper secondary graduates to the population at the typical age of graduation exceeds 70 per cent. In Denmark, Finland, Germany, Japan and Poland, graduation rates exceed 90 per cent. The challenge now is to ensure that the remaining fraction is not left behind, with the risk of social exclusion that this may entail.
- Comparing the attainment of the population aged 25 to 34 years with that of the population aged 45 to 54 shows that the proportion of individuals who have not completed upper secondary education has been shrinking in almost all OECD countries, and in some rapidly. Many countries with traditionally low levels of education are catching up.
- Among older age groups, females have lower levels of education than males, but for younger people the pattern has reversed and today, graduation rates for females exceed those for males in most countries.

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

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

- On average across OECD countries, 30 per cent of persons at the typical age of graduation currently complete the tertiary-type A level of education – but the figure ranges from around 40 per cent in Australia, Finland, Iceland and New Zealand to 20 per cent or below in Austria, the Czech Republic, Germany, Italy and Switzerland.
- On average, one third of OECD students “drop out” before they complete their first degree, regardless of whether they are following tertiary-type A or tertiary-type B programmes.
- As measured by educational attainment, there has been an increase in the stock of university-level skills in the adult population. But most of that increase is due to significant increases in tertiary graduation rates in a comparatively small number of countries.
- On average across OECD countries, every third tertiary-type A graduate obtains a degree in the social sciences, business or law. The second most popular fields are science-related, from which one in four students graduate, on average.
- In the humanities, arts, education, health and welfare, on average in OECD countries more than two thirds of the tertiary-type A graduates are females, whereas there are less than one third in mathematics and computer science and less than one quarter in engineering, manufacturing and construction. Males are also more likely than females to earn advanced research qualifications, such as doctorates.

...the quality of learning outcomes,...

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

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

Indicators A4, A5 and A6 not only benchmark the overall performance of countries (**Framework Cell 1.D**), but devote much attention also to the distribution of knowledge and skills in the student population, with the aim to assess to what extent countries succeed in combining high overall performance with an equitable distribution of learning outcomes (**Framework Cell 1.A**).

- 4<sup>th</sup>-grade students in Sweden perform significantly higher in reading than their counterparts in all other OECD countries. Seven other countries (the Czech Republic, England, Germany, Hungary, Italy, the Netherlands and the United States) still perform significantly above the OECD average.
- On average among OECD countries, 10 per cent of 15-year-olds have acquired Level 5 reading literacy skills, which involve evaluation of information and building of hypotheses, drawing on specialised knowledge, and accommodating concepts contrary to expectations. However, this percentage varies from 19 per cent in Finland and New Zealand to below 1 per cent in Mexico. An average of 12 per cent of 15-year-olds have only acquired the most basic literacy skills at Level 1 and a further 6 per cent fall even below that.

- Six countries (the Czech Republic, Germany, Greece, Hungary, Italy and the United States) performed relatively better in PIRLS than in PISA. In the former four cases, scores were above the OECD average in PIRLS and are below the OECD average in PISA. Three countries performed relatively better in PISA than in PIRLS, Iceland, New Zealand and Norway. France and Sweden performed similarly relative to other countries on both assessments.
- 15-year-olds in Japan display the highest mean scores in mathematical literacy, although their scores cannot be distinguished statistically from students in two other top-performing countries, Korea and New Zealand. On the scientific literacy scale, students in Japan and Korea demonstrate the highest average performance.
- While there are large differences in mean performance among countries, the variation of performance among 15-year-olds within each country is many times larger. However, wide disparities in performance are not a necessary condition for a country to attain a high level of overall performance. On the contrary, five of the countries with the smallest variation in performance on the mathematical literacy scale, namely Canada, Finland, Iceland, Japan and Korea, all perform significantly above the OECD average, and four of them, Canada, Finland, Japan and Korea, are among the six best-performing countries in mathematical literacy.

*...and how this varies between genders,...*

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

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

- Already at 4th-grade level, females tend to outperform males in reading literacy, on average, and at age 15 the gender gap in reading tends to be large. In mathematics, 15-year-old males tend to be at a slight advantage in most countries whereas in science, gender patterns are less pronounced and uneven.
- Despite these overall patterns, countries differ, however, widely in the magnitude of gender differences in the different subject areas.
- Gender differences also exist in attitudes and approaches to learning. In the majority of countries, 15-year-old females tend to emphasise memorisation strategies, while males tend to be stronger on elaboration strategies. In all countries, females express greater interest in reading than males while males

tend to express more interest in mathematics. Both differences are closely mirrored in performance patterns.

- Gender differences are also observed with regard to the confidence that students express in their abilities and whether they believe in the benefits of learning. In almost all countries, females express a higher self-concept than do males in reading while, in mathematical literacy, males tend to express a higher self-concept than females. In terms of their general self-efficacy males score significantly higher than females, overall and in most countries.
- In about half the countries, females preferred co-operative learning more than males did, whereas males in most countries tended to prefer competitive learning more than females did.

*...how performance varies between schools and students,...*

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

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

- On average, differences in the performance of 15-year-olds between schools account for 36 per cent of the OECD average variation in student performance, but this proportion varies from below 10 per cent in Iceland and Sweden to more than 50 per cent in Austria, Belgium, the Czech Republic, Germany, Greece, Hungary, Italy and Poland.
- Some of the variation between schools is attributable to geography, institutional factors or the selection of students by ability. The differences are often compounded by family background, particularly in countries with differentiated school systems, since students' results are associated not only with their own individual backgrounds but – to a greater extent – with the backgrounds of others at their school.
- High overall variation can result from high within-school differences, high between-school differences or a combination of the two.
- In school systems with differentiated school types, the clustering of students with particular socio-economic characteristics in certain schools is greater than in systems where the curriculum does not vary significantly between schools.

*...important factors associated with student performance,...*

It is well established that students who choose to spend a lot of time reading tend to be better readers than those who do not. However, in examining students' reading practices, it is important to consider not just the amount of time that students spend reading, but also how they invest this time. While some students may choose to read only one type of material (*e.g.*, magazines) frequently, others read a diversity of materials. Understanding what students read frequently and how these choices are related to reading performance

can prompt educators and policymakers to devise early-intervention strategies to foster certain reading behaviours in order to promote literacy. **New:** To shed light on this, the newly introduced **Indicator A8** profiles students' reading practices according to the materials they read frequently and demonstrates the relationship between these profiles and their performance in reading literacy. **New:** Furthermore, the newly introduced **Indicator A9** takes this further to explore a broader concept of “engagement” in reading, which encompasses both reading practices and attitudes toward reading.

**New:** Finally, the newly introduced **Indicator A10** reports data on students' learning strategies, motivational preferences, self-related competencies, and learning preferences as important capacities of students to regulate their own learning. In societies that increasingly depend on the capacity and motivation of their citizens to continue learning throughout life, these capacities are an important outcome of education in themselves and may have an impact on students' success both in school and in their future lives.

Indicators A8, A9 and A10 do not only reflect on learning activities and engagement as important outcomes of education (**Framework Cell 1.A**) but also as important policy levers that can help to both raise overall performance and counter social disadvantage (**Framework Cells 2.A and 2.B**).

- Females and males show different profiles of reading. Among the two profiles of students poorly diversified in reading, mainly readers of newspapers and magazines, males and females are more or less equally distributed. The third profile, of readers more oriented towards comics, comprises a majority of males, while the profile oriented towards reading books, especially fiction, comprises a majority of females.
- Not surprisingly, 15-year-olds reading a diversity of print material are more proficient in reading than those reading a limited set of print material. Daily engagement in reading magazines, newspapers and comics – a kind of reading that is perhaps less valued by school than fiction books – seems, at least in some cultural contexts, to be a fruitful way of becoming a proficient reader.
- Engagement in reading, as defined in Indicator A9 (time spent reading for pleasure, time spent reading a diversity of material, high motivation and interest in reading), varies widely from country to country with Finland, at the high end, and Spain, at the low end, the extremes. On average, females tend to be substantially stronger engaged in reading than males.
- Fifteen-year-olds whose parents have the lowest occupational status but who are highly engaged in reading achieve better reading scores than students whose parents have high or medium occupational status but who are poorly engaged in reading. All students who are highly engaged in reading achieve reading literacy scores that, on average, are significantly above the OECD mean, whatever their parents' occupational background.
- The extent to which students monitor their own learning is closely related to performance in reading literacy and that students' beliefs that a goal is feasible, that the resources necessary to achieve it are accessible and that it is worth expending energy to achieve the goal are strong predictors of student performance in reading literacy.

*...and the returns to investments in education for individuals and the society.*

As levels of skill tend to rise with educational attainment, the social costs incurred when those with higher levels of education do not work also rise; and as populations in OECD countries age, higher and longer participation in the labour force can lower dependency ratios and help to alleviate the burden of financing public pensions. **Indicators A12** and **A13** examine the relationship between educational attainment and labour force activity, comparing rates of participation in the labour force first, and then rates of unemployment. Measuring the relationship between labour force activity and educational attainment, these are, first

and foremost, indicators of the long-term outcomes of education systems (**Framework Cell 1.D**). The adequacy of workers' skills and the capacity of the labour market to supply jobs that match those skills are, however, also important contexts for national education policy making (**Framework Cell 3.D**). Unemployment rates can also influence student decisions to continue in education and therefore can shed light on differing participation rates in education across countries.

- Labour force participation rates rise with educational attainment in most OECD countries. With very few exceptions, the participation rate for graduates of tertiary education is markedly higher than that for upper secondary graduates. The gap in male participation rates is particularly wide between upper secondary graduates and those without an upper secondary qualification.
- The labour force participation rate for females with less than upper secondary attainment is particularly low. Rates for females with tertiary attainment approach or exceed 80 per cent in all but four countries, but remain below those of males in all countries except one.
- The gender gap in labour force participation decreases with increasing educational attainment. Although a gender gap in labour force participation remains among those with the highest educational attainment, it is much narrower than among those with lower qualifications.
- On average among countries, a young person aged 15 in 2001 can expect to be in formal education for as little as under six and a half years. In 16 of the 28 countries studied, this period ranges from six to seven and a half years.
- In addition to the number of years spent in education, a young person aged 15 can expect to hold a job for 6.4 of the 15 years to come, to be unemployed for a total of 0.8 years and to be out of the labour market for 1.4 years. It is in the average duration of spells of unemployment that countries vary most, which primarily reflects differences in youth employment rates.
- In absolute terms, young people today can expect to spend less time in unemployment after completing their initial education than they did ten years ago.

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

- Education and earnings are positively linked. Upper secondary and post-secondary non-tertiary education form a break point in many countries beyond which additional education attracts a particularly high premium. In all countries, graduates of tertiary-level education earn substantially more than upper secondary and post-secondary non-tertiary graduates. Earnings differentials between tertiary and upper



secondary education are generally more pronounced than those between upper secondary and lower secondary or below.

- Earnings of people with below upper secondary education tend to be 60 to 90 per cent of those of upper secondary and post-secondary non-tertiary graduates.
- Females still earn less than males with similar levels of educational attainment.
- An analysis of the driving factors of economic growth shows that rising labour productivity accounted for at least half of GDP per capita growth in most OECD countries.
- Labour productivity can be increased in several ways and human capital plays a pivotal role in this equation, not just as an input linking aggregate output to the stocks of productive inputs, but also as a determinant of the rate of technological progress.
- The estimated long-run effect on economic output of one additional year of education in the OECD area is in the order of 6 per cent.

*Chapter B considers the financial and human resources invested in education, in terms of...*

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

*...the resources that each country invests in education relative to its number of students enrolled,...*

Effective schools require the right combination of trained and talented personnel, adequate facilities, state-of-the-art equipment, and motivated students ready to learn. The demand for high-quality education, however, can translate into higher costs per student, and must therefore be weighed against undue burdens for taxpayers. No absolute standards exist for measuring the per student resources needed to ensure optimal returns for individual students or society as a whole. Nonetheless, international comparisons can provide a starting point for discussion by evaluating the variation that exists between OECD countries in educational investment. **Indicator B1** examines direct public and private expenditure on educational institutions in relation to the number of their full-time equivalent (FTE) students. It also reviews how OECD countries apportion per capita education expenditure between different levels of education.

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

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

- In the OECD area, annual public and private expenditure on educational institutions per student between primary and tertiary education is equal to US\$ 6 361 but ranges from US\$ 3 000 per student

or less in the Czech Republic, Hungary, Mexico, Poland, the Slovak Republic, and Turkey to more than US\$ 8 000 per student in Austria, Denmark, Norway, Sweden, Switzerland and the United States.

- OECD countries spend US\$ 4 470 per primary student, US\$ 5 501 per secondary student and US\$ 11 109 per tertiary student, but these averages mask a broad range of expenditure across countries. On average, OECD countries spend 2.2 times as much per student at the tertiary level than at the primary level.
- In some OECD countries, low annual expenditure per tertiary student still translates into high overall costs per tertiary student because the duration of tertiary studies is long.
- Expenditure per primary, secondary and post-secondary non-tertiary student increased between 1995 and 2000 by over 25 per cent in Australia, Greece, Ireland, Portugal and Spain whereas at the tertiary level, spending on education has not always kept pace with the rapid expansion of enrolments. In eight out of 22 OECD countries expenditure on educational institutions per tertiary student decreased between 1995 and 2000 whereas GDP per capita increased.

*...and relative to national income,...*

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

- OECD countries spend 5.9 per cent of their collective GDP on their educational institutions.
- In 14 out of 19 OECD countries, public and private spending on educational institutions increased between 1995 and 2000 by more than 5 per cent but, in contrast to the early 1990s, increases in spending on educational institutions tended to fall behind the growth in national income.
- Two-thirds of expenditure on educational institutions, or 3.6 per cent of combined OECD GDP, is devoted to primary, secondary and post-secondary non-tertiary education, although Canada, Korea and the United States spend more than 2 per cent of their GDP on tertiary education.

*...the ways in which education systems are financed, and the sources of the funds,...*

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

New funding strategies aim not only at mobilising the required resources from a wider range of public and private sources, but also at providing a broader range of learning opportunities and improving the efficiency of schooling. In the majority of OECD countries, publicly funded primary and secondary education is also organised and delivered by public institutions. However, in a fair number of OECD countries

the public funds are then transferred to private institutions or given directly to households to spend in the institution of their choice. In the former case, the final spending and delivery of education can be regarded as subcontracted by governments to non-governmental institutions, whereas in the latter instance, students and their families are left to decide which type of institution best meets their requirements. To the extent that private financing of education creates barriers for the participation of learners from lower income groups, this may reflect in variation of performance between institutions (see also Indicator A7).

To shed light on these issues, **Indicator B3** examines the relative proportions of funds for educational institutions from public and private sources, and how these figures have evolved since 1995. As with Indicator B2, national resources devoted to education are a key national policy lever (**Framework Cell 2.D**) as well as an antecedent to the activities of schools, classrooms and individual learners (**Framework Cells 3.C, 3.B and 3.A**).

- Education institutions are still mainly funded from public sources: 88 per cent of all funds for educational institutions comes directly from public sources. Private funding is however significant in Korea (where it represents 40 per cent of the total), the United States (approaching one third of the total), Australia and Japan (almost one quarter of the total).
- In a number of OECD countries, governments pay most of the costs of primary, secondary and post-secondary non-tertiary education but leave the management of educational institutions to the private sector, to provide a wider range of learning opportunities without creating barriers to the participation of students from low-income families.
- Tertiary institutions tend to mobilise a much higher proportion of their funds from private sources than primary, secondary and post-secondary non-tertiary institutions. The private share ranges from less than 3 per cent in Denmark, Finland and Greece to 77 per cent in Korea but includes private payments that are subsidised from public sources.
- Across the education levels the trend in the public/private share of education expenditure is a mixed one with shifts towards public spending as much in evidence as shifts towards private expenditure. In most cases where there have been shifts towards private expenditure this did not lead to a decrease in the real level of public-sector spending.

*...relative to the size of public budgets,...*

All governments are involved in education, funding or directing the provision of services. Since markets offer no guarantee of equal access to educational opportunities, governments fund educational services to ensure that they are within the reach of their populations. Public expenditure on education as a percentage of total public expenditure indicates the value of education relative to the value of other public investments such as health care, social security, defence and security. **Indicator B4** completes the picture of the volume of resources invested in education by examining changes in public spending on education in absolute terms and relative to changes in overall public spending.

Since the second half of the 1990s, most OECD countries made serious efforts to consolidate public budgets. Education had to compete for public financial support against a wide range of other areas covered in government budgets. **New:** To portray this, a newly introduced feature of the indicator is to evaluate changes in educational expenditure in absolute terms and relative to changes in the size of public budgets.

Finally, the level of government that has responsibility for, and control over, the funding of education is often thought to have a strategic advantage in influencing decisions regarding educational governance. An important question in educational policy is, therefore, the extent to which the division of responsibility

for educational funding between national, regional and local authorities translates into responsibility for educational decision-making. **New:** To shed light on this, a newly introduced feature of Indicator B4 is an examination of the source of public funds by level of government. Important decisions regarding educational funding are made both at the level of government where the funds originate and at the level of government by which they are finally spent or distributed. In illustrating each country's policy for centralisation or decentralisation of funding, this indicator provides, along with other indicators, some context for the educational performance of the system as a whole.

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

- On average, OECD countries devote 13.0 per cent of total public expenditure to educational institutions.
- Public funding of education is a social priority, even in OECD countries with little public involvement in other areas.
- Public expenditure on education tended to grow faster than total public spending, but not as fast as GDP. Education's share of public expenditure grew fastest in Denmark, Greece and Sweden. In the Czech Republic, Germany, Italy, the Netherlands, the Slovak Republic and Sweden, public expenditure on education increased between 1995 and 2000 despite public budgets falling in real terms.
- In virtually every OECD country, public funding of primary, secondary and post-secondary non-tertiary education is more decentralised than public funding for tertiary education.

*...different financing instruments,...*

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

Governments subsidise the costs of education and related expenditure in order to increase access to education and reduce social inequalities. Furthermore, public subsidies play an important role in indirectly funding educational institutions. Channelling institutional funding through students may heighten institutional competition and therefore the efficiency of education funding. Since aid for student living costs can also serve as a substitute for work as a financial resource, public subsidies may enhance educational attainment by enabling students to study full-time and to work fewer hours or not at all.

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

- Public subsidies for students and households are mainly a feature at the tertiary level.
- An average of 17 per cent of public spending on tertiary education is devoted to supporting students, households and other private entities. In Australia, Denmark, New Zealand, Sweden and the United Kingdom, public subsidies account for about 30 per cent or more of public tertiary education budgets.
- Subsidies are generally more evident in systems where students are expected to pay for at least part of the cost of their education.
- Subsidised student loan systems tend to operate in countries with high levels of participation at the tertiary level.
- In most OECD countries, the beneficiaries of public subsidies have considerable discretion regarding the spending of subsidies. In all reporting OECD countries, subsidies are spent mainly outside educational institutions, and almost half of these countries, exclusively outside.

*...and how the money is invested and apportioned among different resource categories.*

Chapter B concludes with an examination of how financial resources are invested and apportioned among resource categories (**Indicator B6**). The allocation of resources can influence the quality of instruction (through the relative expenditure on teachers' salaries, for example), the condition of educational facilities (through expenditure on school maintenance), and the ability of the education system to adjust to changing demographic and enrolment trends. A comparison of how OECD countries apportion their educational expenditure among resource categories can provide some insight into the differences in organisational structure and operation of educational institutions. Systemic budgetary and structural decisions on allocating resources eventually make themselves felt in the classroom; they affect teaching and the conditions under which teaching takes place. A system-wide description of decisions on how educational funding is spent which will influence system level outputs (**Framework Cell 2.D**).

- On average, one quarter of expenditure on tertiary education is attributable to R&D at tertiary educational institutions. Significant differences between OECD countries in the emphasis on R&D in tertiary institutions explain part of the large differences in expenditure per tertiary student.
- In primary, secondary, and post-secondary non-tertiary education combined, current expenditure accounts, on average across all OECD countries, for 92 per cent of total spending. In all but three OECD countries, 70 per cent or more of primary, secondary and post-secondary non-tertiary current expenditure is spent on staff salaries.

*Chapter C looks at access to education, participation and progression, in terms of...*

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

*...the expected duration of schooling, overall and at the different levels of education,...*

Virtually all young people in OECD countries can expect to go to school for 11 years. However, participation patterns and progression through education vary widely. Both the timing and participation rate in pre-school and after the end of compulsory education differ considerably between countries. Some countries have extended participation in education, for example, by making pre-school education almost universal by the age of three, by retaining the majority of young people in education until the end of their teens, or by maintaining 10 to 20 per cent participation among up to the late 20s.

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

- In 25 out of 28 OECD countries, individuals participate in formal education for between 16 and 20 years, on average. Most of the variation between countries on this measure derives from differences in enrolments in upper secondary education.
- School expectancy increased between 1995 and 2001 in 20 out of 21 OECD countries reporting comparable data.
- In half of the OECD countries, more than 70 per cent of children aged three to four are enrolled in either pre-primary or primary programmes. At the other end of the spectrum, a 17-year-old can expect to spend an average of 2.6 years in tertiary education.
- In the majority of OECD countries, females can expect to receive 0.5 more years, on average, of education than males.

*...entry to and participation in different types of educational programmes and institutions,...*

While the successful graduation from upper secondary education is becoming the norm in most OECD countries, routes to it are becoming increasingly varied. Upper secondary programmes can differ in their curricular content, often depending on the type of further education or occupation for which the programmes are intended to prepare students. Most upper secondary programmes in OECD countries are primarily designed to prepare students for further studies at the tertiary level. The orientation of these programmes can be general, pre-vocational or vocational. Besides the programmes primarily preparing students for further education, in most OECD countries there are also upper secondary programmes designed to prepare students for direct entry to the labour market. Enrolment in these different types of educational programmes is examined in **Indicator C2**.

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

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

- Today, four out of ten school leavers are likely to attend tertiary programmes leading to the equivalent of a bachelors' or higher tertiary-type A degree. In some OECD countries, every second school leaver is likely to attend such a programme.
- On average in OECD countries, a 17-year-old can now expect to receive 2.6 years of tertiary-type A education, of which 2 years will be full-time.

- With the exception of France and Germany, participation in tertiary education grew in all OECD countries between 1995 and 2001.
- The majority of tertiary students are enrolled in public institutions, but in Belgium, Japan, Korea, the Netherlands and the United Kingdom, most students are enrolled in privately managed institutions.
- The majority of primary and secondary students are enrolled in public institutions. However, privately managed schools now enrol, on average, 10 per cent of primary students, 13 per cent of lower secondary students and 20 per cent of upper secondary students.

*...cross-border movements of students,...*

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

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

- Five countries (Australia, France, Germany, the United Kingdom and the United States) receive 71 per cent of all foreign students studying in the OECD area.
- In absolute numbers, students from Greece, Japan, Korea and Turkey represent the largest sources of intakes from OECD countries. Students from China and Southeast Asia comprise the largest numbers of foreign students from non-OECD countries.
- In relative terms, the percentage of foreign students enrolled in OECD countries ranges from below one to almost 17 per cent in Switzerland. Proportional to their size, Australia, Austria, Belgium, Switzerland and the United Kingdom take in the most foreign students, when measured as a percentage of their tertiary enrolments.

*...and learning beyond initial education.*

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

- The percentage of 20 to 24-year-olds not in education ranges from 50 to 70 per cent in most OECD countries.
- In some countries, education and work largely occur consecutively, while in other countries they are concurrent. Work-study programmes, relatively common in European countries, offer coherent vocational education routes to recognised occupational qualifications.
- In some countries, many young people also combine paid work out of school hours with education. In other countries, initial education and work are rarely associated.
- Most persons aged 15 to 19 are still in school. In many OECD countries, a high percentage of those who are not are either unemployed or not in the labour force.
- In Austria, Italy, Mexico, the Slovak Republic and Turkey, over 10 per cent of persons aged 15 to 19 are neither at school nor in the workforce.
- This situation is true mainly for young males in Austria, Finland, the Slovak Republic and Sweden, and young females in Greece, Mexico, Portugal and Turkey.

*Chapter D examines the learning environment and organisation of schools, in terms of...*

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

*...student learning conditions,...*

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

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

- Students between the ages of 9 and 11 receive, on average across OECD countries, 813 hours per year of compulsory instruction time and 840 hours per year of intended instruction time in the classroom, while students between the ages of 12 and 14 spend nearly 100 hours more per year. However, these figures vary significantly across countries.
- On average among countries, reading and writing in the language of instruction, mathematics and science comprise about half of the compulsory curriculum for 9 to 11-year-olds and 41 per cent for 12 to 14-year-olds.
- The degree to which schools and local and regional authorities can specify curricular content and timetables varies widely from country to country.

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



newly introduced feature of the indicator is the examination of a wider range of categories of educational staff, including both pedagogical and other personnel.

- The average class size in primary education is 22, but varies between countries from 36 students in Korea per class to less than half of that number in Greece, Iceland and Luxembourg.
- The number of students per class increases by an average of two students between primary and lower secondary education but ratios of students to teaching staff tend to decrease with increasing levels of education due to more annual instruction time.
- Teaching and non teaching staff employed in primary and secondary schools ranges from less than 80 persons per 1000 students enrolled in Canada, Japan, Korea and Mexico to 119 persons or more per 1 000 students in France, Hungary , Iceland and Italy.

*...the availability and use of information technology at school and at home,...*

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

- Among the 14 countries with comparable data represented in indicator D3, a typical student in upper secondary education attends schools where there is one computer for every 9 students. This ratio varies widely among countries, from three students per computer in Denmark and Sweden to more than 15 students per computer in Mexico and Spain.
- On average, 63 per cent of upper secondary students attend schools where principals reported that teachers' lack of knowledge and skills was an obstacle to successful ICT implementation: more than three quarters of principals reported this in France and Norway.
- On average, one third of upper secondary teachers participated in ICT-related professional development in the school year 2000/2001, compared to one half of teachers who participated in non-ICT related professional development in the same period.
- From a list of 22 obstacles to the use of ICT in teaching - including obstacles related to computer hardware and infrastructure, computer software, teachers and school and classroom organisation – insufficient number of computers for students to use tended to be reported by the principals of upper secondary students as the *most serious obstacle* to the use of ICT in teaching. A shortage of maintenance and technical support, as well as teachers' lack of knowledge/skills in using computers for instructional purposes were other frequently reported obstacles.

*...teacher training and professional development of teachers,...*

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

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

- All OECD countries now require a tertiary-type A or tertiary-type B qualification (ISCED 5A or 5B) in order to enter the teaching profession at the primary level and beyond.
- The duration of pre-service training for primary teachers varies from three years in Austria, Belgium (both Flemish and French Communities), Iceland, Ireland, New Zealand and Spain to five years or more in Finland, France and Germany.
- Over 90 per cent of upper secondary students attend schools where the principal organises staff development activities (including research) in Denmark, Norway and Sweden.
- Observational visits to other upper secondary schools is a frequent practice in Denmark, Finland, Korea, Norway, Portugal and Sweden. Formal peer observation or mentoring is more often used in Denmark, France, Italy, Korea, Mexico and Switzerland.

*... and teachers' working conditions.*

Chapter D concludes with a comparative review of teachers' working conditions. Education systems employ a large number of professionals in increasingly competitive market conditions. Ensuring a sufficient number of skilled teachers is a key concern in all OECD countries. Key determinants of the supply of qualified teachers are the salaries and working conditions of teachers, including starting salaries and pay scales, and the costs incurred by individuals to become teachers, compared with salaries and costs in other occupations. Both affect the career decisions of potential teachers and the types of people attracted to the teaching profession. At the same time, teachers' salaries are the largest single factor in the cost of providing education. Teacher compensation is thus a critical consideration for policy-makers seeking to maintain the quality of teaching and a balanced education budget. The size of education budgets naturally reflects trade-offs between a number of interrelated factors, including teachers' salaries, the ratio of students to teaching staff, the quantity of instruction time planned for students, and the designated number of teaching hours. To shed light on these issues, **Indicator D5** shows the starting, mid-career and maximum statutory salaries of teachers in public primary and secondary education, and incentive schemes and bonuses used in teacher rewards systems.

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

the statutory teaching time, *i.e.*, the time that full-time teachers are expected to spend teaching students. Although working time and teaching time only partly determine the actual workload of teachers, they do give some insight into differences between countries in what is demanded of teachers.

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

- The mid-career salaries of lower secondary teachers range from less than US\$ 10 000 in Hungary and the Slovak Republic to US\$ 40 000 and more in Germany, Japan, Korea, Switzerland and the United States.
- An upper secondary teacher's salary per teaching hour is, on average, 40 per cent higher than that of a primary teacher, but the difference varies from 10 per cent or less in Australia, New Zealand, Scotland, the Slovak Republic, Turkey and the United States to around 60 per cent or more in the Flemish Community of Belgium, France, Hungary, Iceland, Korea, the Netherlands and Spain.
- In lower secondary education, teachers in Australia, Denmark, England, New Zealand and Scotland reach the highest step on the salary scale in 11 years or less, while a teacher in Austria, the Czech Republic, France, Greece, Hungary, Italy, Japan, Korea and Spain must teach for more than 30 years before reaching the maximum.
- In most countries, allowances are paid to all or most teachers for taking on management responsibilities; teaching more classes or hours than are required under a full-time contract (*e.g.*, acting duties); and involvement in special tasks such as guidance counselling or training student teachers.
- The number of teaching hours per year in public primary schools averages 792 hours but ranges from 605 to 1 139 hours among OECD countries.
- The average number of teaching hours in the lower secondary education is 714 hours but ranges from 553 to 1 182 hours among OECD countries.
- Regulations of teachers' working time vary across countries. In most countries, teachers are formally required to work a specific number of hours; while in others just teaching time in lessons per week is specified.

*It also provides a more general picture of teacher supply and demand, including teacher demographics.*

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

antecedents at school, class and student level (**Framework Cells 3.A, 3.B and 3.C**) as they will impact on the school learning environment, classroom climate and pupil engagement.

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

- The percentages of less than fully qualified teachers ranges from 0.4 per cent in Ireland to 20 per cent or more in Mexico, Norway, Portugal, and Sweden.
- On average, about 12 per cent of teaching posts (full-time equivalents) were vacant and were to be covered at the beginning of school year 2001/2002 in the countries for which upper secondary schools were surveyed.
- Nearly two thirds of the teachers in Mexico and Switzerland, but only less than 1 per cent in Korea are employed on a part-time basis.
- In upper secondary education, teacher shortage is most pressing in computer science, mathematics, foreign languages, science, and technology, whereas it appears less problematic in arts, physical education, social studies and language of instruction.
- In 15 out of 19 OECD countries, most primary teachers are at least 40 years old, and in Germany, Italy and Sweden, more than one third of teachers are older than 50 years.
- Compared with 1998, the average proportion of teachers aged 50 years or over increased on average by 6.2 per cent (1.8 percentage points) in secondary education. In Finland, Germany, Ireland and the United Kingdom, this proportion rose by more than 4 percentage points.
- The proportion of young teachers increased in 10 out of 14 OECD countries for which data are available. In France, Korea, Luxembourg, New Zealand and Sweden, the proportion of teachers aged under 30 years increased by more than 3 percentage points whereas Ireland and Japan are the only two countries showing significant decrease between 1998 and 2001 in the proportion of teachers under 30 years.

## FURTHER RESOURCES

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

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

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

# READER'S GUIDE

## **Coverage of the statistics**

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

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

## **Calculation of international means**

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

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

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

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

For financial tables using 1995 data, both the country mean and OECD total are calculated for countries providing both 1995 and 2000 data. This allows comparison of the country mean and OECD total over time with no distortion due to the exclusion of certain countries in the different years.

### **Classification of levels of education**

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

### **Symbols for missing data**

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

- a* Data not applicable because the category does not apply.
- c* There are too few observations to provide reliable estimates (*i.e.*, there are fewer than five schools or fewer than 30 students with valid data for this cell).
- m* Data not available.
- n* Magnitude is either negligible or zero.
- x* Data included in another category or column of the table (*e.g.*, *x*(2) means that data included in column 2 of the table).

## Country codes

### *OECD Member countries*

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

### **Countries participating in the OECD/UNESCO World Education Indicators programme**

Argentina, Brazil, Chile, China, Egypt, India, Indonesia, Jamaica, Jordan, Malaysia, Paraguay, Peru, Philippines, Russian Federation, Thailand, Tunisia, Uruguay and Zimbabwe participate in the OECD/UNESCO World Education Indicators (WEI) programme. Data for these countries are collected using the same standards and methods that are applied for OECD countries and therefore are included in this publication. Israel has observer status in OECD's activities on education and has contributed to the OECD indicators on educational finance.

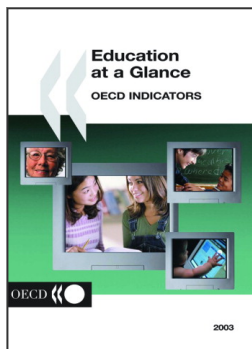
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edition

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