

# A statistical profile of the teaching profession

Maria Teresa Siniscalco

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ISBN 92-2-113115-7

*First published 2002*

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# Preface and acknowledgements

As the Introduction will also explain, this publication results from a long series of efforts by the Joint ILO/UNESCO Committee of Experts on the status of teachers (CEART) to develop internationally comparable statistics in the form of indicators which would help it to fulfil its mandate to monitor and promote a better status for teachers in the interest of quality education. In the course of the last few years, international organizations, notably the OECD, but also Eurydice on behalf of the European Union, UNESCO, through its Department of Statistics and the newly created UNESCO Institute for Statistics, and the ILO, through efforts by the Sectoral Activities Department and the Bureau for Statistics, have steadily developed methodological instruments and networks at national level to meet these aspirations. The effort is directed towards improving the geographic coverage of comparable indicators, the quality of information generated which could aid international comparisons, and national capacity to produce and utilize the information to better direct policy, legislation and practice in order to raise the status of the teaching profession, and thus the quality of education for all concerned – learners, parents, businesses, communities and nations.

The present publication assembles much of the best data on the teaching profession produced in the last few years. Although it does not generate extensive new information, it seeks to present information produced by the principal international organizations working on these issues in a form which focuses attention on the main issues – what are the conditions, positive and negative, under which teachers work, and what are the policy trade-offs which governments as the principal educational employers and providers face in ensuring teaching and learning opportunities to meet the expectations of citizens for universally accessible and higher quality education?

The author, Maria Teresa Siniscalco, has worked extensively on international statistics concerning teachers and education in recent years, in particular, but not exclusively within the OECD framework for international education indicators. The present work has benefited also from extensive review and comments from the UNESCO Institute for Statistics, the Section for Teacher Policy of the Division of Higher Education, UNESCO, Paris, and the Bureau for Statistics and the Sectoral Activities Department of the International Labour Office, Geneva. Final editing has been carried out within the ILO's Sectoral Activities Department, and text-processing, lay-out and printing under the responsibility of the ILO's Document and Publications Production, Printing and Distribution Branch. The original English version has been translated by UNESCO into French. The publication is jointly financed by the ILO and UNESCO. The two organizations gratefully acknowledge the permission of OECD, Eurydice and others to reproduce information contained in this publication.

Above all, the report is the fruit of joint efforts by the ILO and UNESCO to improve teachers' status in the course of five decades. This effort has incited renewed interest in recent years as teacher shortages and the quality of education preoccupy popular imagination and the agendas of national decision-makers. It is considered a work in progress for which constructive comments on future directions are always welcome.

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# Executive summary

The **Recommendation concerning the Status of Teachers**, adopted by a special Intergovernmental Conference convened jointly by UNESCO and ILO in Paris in 1966, recognized and emphasized the interdependence between the status of teachers and the status of education. Since then, there has been a progressive shift of policy attention towards teachers as central actors to educational improvement, coupled with an increasing demand for sound and comparable quantitative evidence.

This report was initially drafted as a contribution to the background documentation for the Seventh Session of the Joint ILO/UNESCO Committee of Experts on the Application of the Recommendation concerning the Status of Teachers – CEART (Geneva, September 2000) and updated in 2001-02 with the most recent available data.

It presents an array of indicators on teachers and the teaching profession, drawing on information from various sources including the European Network for Information in Education (Eurydice), International Bureau of Education (IBE), International Labour Office (ILO), Organization for Economic Cooperation and Development (OECD) and United Nations Educational, Scientific and Cultural Organization (UNESCO).

While UNESCO and ILO have the largest geographical coverage, comprising all countries of the world, the data available from these Agencies cover only some of the aspects considered. Conversely, a richer array of indicators is provided by Eurydice and the OECD. For this reason, although the report presents UNESCO and ILO data whenever possible to illustrate both the current situation and changes over time at global level, much of the information presented is for the OECD countries and for some non-member countries that have been participating in the OECD/UNESCO World Education Indicators programme (WEI) for establishing comparative standards and methods.

This report focuses on the areas of interest delineated in the report of the Fourth Special Session of the CEART (Paris, 1997).

## **The demand for new teachers continues to be highest in the developing world**

The pressure to provide more teachers has been greatest in the developing world, which currently accounts for over 95 per cent of the world's population growth. Although the number of primary schoolteachers has increased steadily in the developing world, these

increases were, on average, counterbalanced by comparable growth in the number of school-age children, so that the ratio of primary age cohorts to teachers in developing countries remains high. At the secondary level, the increases in the number of secondary teachers have outpaced the growth of the youth population of secondary school age, but the size of the corresponding out-of-school population indicates that many countries still experience a severe shortage of teachers and need to cope with the problem of training large number of new teachers under limited budget constraints.

## **Pupil/teacher ratios range, between countries, from 9:1 to 72:1**

In developing countries pupil/teacher ratios are twice as large as in developed ones and high pupil/teacher ratios are often associated with high rates of dropout.

## **The demographic composition of the teaching force varies across countries, often in close relationship to the level of development**

In most OECD and other countries of the European Union the majority of teachers are over 40, while in many middle-income or developing countries participating in the OECD/UNESCO WEI programme, the average age is much lower. The proportion of teachers under 30 years of age is very high in some of the least developed countries, where there tend to be very few experienced teachers.

The percentage of women among teachers continued to rise during the 1990s, although women outnumber men in developed countries, whereas the opposite is often true in developing countries.

## **A tertiary qualification is now required of new teachers in all OECD and WEI countries ...**

Pre-service training ranges from three to five-and-a-half years for primary teachers and from three-and-a-half to six-and-a-half years for upper secondary teachers in OECD countries and other European countries. New primary teachers must earn a tertiary qualification in all developed countries and many countries in transition. Also all WEI countries train their teachers at tertiary level. Professional training can either be concurrent with subject matter instruction or consecutive.

**... but current pre-service requirements do not necessarily correspond to the qualifications of the existing teaching force**

In at least half of the countries in the different world regions, more than 90 per cent of teachers meet the nationally defined academic qualification. However, since pre-service requirements have changed substantially in many countries over the years, they do not necessarily correspond to the level of qualification of the existing teaching force, and country level data shows wide variations between countries in this respect. All primary teachers have a tertiary qualification in Jordan and the Philippines, while these are less than two out of ten in China and Tunisia.

In many of the least developed countries the majority of primary teachers have at most a lower secondary qualification.

**Both working time and teaching time show wide variations across countries**

Working time varies across countries from below 20 hours per week to over 40.

Across countries of the European Union, teaching time is relatively uniform, while the largest variations in working time are determined by the time prescribed for non-teaching duties. Conversely, wider variations in the annual number of teaching hours are shown across the OECD and WEI countries: teachers in Australia, the Philippines, Sri Lanka and the United States spend almost twice as much time teaching as do teachers in Hungary at all levels of education and the Republic of Korea, Spain, Tunisia and Turkey at the secondary level.

While in OECD countries teaching time is generally highest in primary education and decreases in secondary education, in some developing countries participating in the WEI programme teaching hours tend to remain the same at all levels of education, possibly as a way to maximize the returns to the high costs of training teachers for the higher levels of education.

Trend data suggest that teaching time was relatively stable during the 1990s.

**There are wide variations across countries in the number of students in a teacher's classroom**

According to the International Association for the Evaluation of Educational Achievements (IEA) international assessment of mathematics and science achievement carried out in 1999, the average size of eighth-grade mathematics classes is smaller than 30 students in most of the 40 participating countries, but in six countries students are, on average, in classes with more than 40 students.

In some of the least developed countries, because of high rates of repetition and dropout the size of the first grade in primary school exceeds twice that of the last grade.

**Teachers' salaries, which are the largest single factor in education expenditure, depend on various policy-related aspects**

Among OECD and WEI countries, primary teacher statutory mid-career salaries range from below US\$10,000 in Brazil, the Czech Republic, Hungary, Indonesia and Peru, to over US\$40,000 in Switzerland. Teachers' salaries are affected by a number of policy choices. One of these choices is the progression of salaries along the teacher career: some countries provide experienced teachers with considerable monetary incentives. The payment of a premium for teachers in the higher levels of education, often in relation to progressively higher qualification requirements, is another policy-related aspect of teachers' salaries: in some countries, upper secondary schoolteachers are paid up to two-thirds more than primary school ones.

Salary trends during the 1990s show different patterns in high- and middle-income countries on one side, where teachers' salaries remained stable or increased, and low-income countries on the other, where salaries continued to deteriorate.

**The ratio of teachers' salaries to GDP per capita reflects countries' level of development**

The ratio of teachers' salaries to gross domestic product (GDP) per capita reflects patterns of relative productivity that vary greatly between sectors in accordance with a country's level of development.

In general, minimum salaries are below GDP per capita in EU and OECD countries, while mid-career and maximum salaries are above GDP per capita. Many middle- and low-income countries reach positions that are comparable to, or higher, than those in OECD countries, when teachers' salaries are compared to national per capita income.

**Teacher working conditions as well as teaching costs per student are determined by the combination of many factors**

Overall, the working conditions of teachers are determined by the combination of many factors, including salaries, class sizes, and teaching workload. The combination of these structural characteristics of education systems translates into higher or lower teaching costs per student, which differ substantially even among countries with similar levels of investment in education.

**Countries with similar expenditure per student on teachers' salaries make different policy choices and trade-offs**

Decomposing the difference between the teacher salary costs per student in each of the countries and the average over all countries (comprising 22 OECD countries and ten WEI countries) into four main components (level of statutory teachers' salaries, intended annual hours of instruction for students, annual

teachers' teaching hours and class size) shows how the different factors influence expenditure in each country.

In some countries, high teacher statutory salaries are compensated by a high teaching time (such as in Switzerland), or larger than average class sizes (such as in the Republic of Korea), while in other countries low salaries are combined with large class sizes and large teaching loads (such as in the Philippines).

In some countries, a lower than average teaching load is compensated by larger class sizes (such as in the Republic of Korea and Tunisia), while in other countries smaller than average class sizes add to a low teaching load, increasing salary costs per student (such as in Spain, Sweden and Hungary).

**The development of a comprehensive comparative statistical profile of teachers is still limited by data gaps and methodological difficulties**

Despite the progress achieved over the last years, many gaps remain. The aspects of the situation of teachers where internationally comparable data are either non-existent or inadequate include direct measures of the qualification of the existing teaching force, in-service teacher training programmes, total teachers' workloads, class sizes, the competitiveness of teachers' employment conditions, teacher learning achievement, and the participation of teachers in the school-level decision-making process.

**The OECD Education Indicators programme indicates how some of these gaps can be filled, while other international organizations are also working to improve quantitative and qualitative information on teachers**

The OECD Education Indicators programme has shown that many indicators of the status of teachers can be developed by means of relatively simple and inexpensive annual data collections, based on a set of definitions, methods and data collection instruments that are annually reviewed and updated collaboratively by participating countries. The necessary data can often be derived from existing national sources that are then projected to international standards using statistical methods. Eurydice, for European Union members, UNESCO's Institute for Statistics and the ILO are working variously on teacher qualifications, employment, gender, hours of work and salary indicators.







# Introduction

Thirty-five years have passed since the Recommendation concerning the Status of Teachers was adopted by a special Intergovernmental Conference convened jointly by UNESCO and ILO in Paris in 1966. While objectives and structures of education systems continue to undergo profound transformations to adapt to changing demand and innovations in the technology of educational delivery, the interdependence between the status of education and the status of teachers, which was at the centre of the Recommendation, is increasingly recognized and emphasized. This focus of policy attention, coupled with a generally increasing demand for sound and comparable quantitative evidence, is leading to a growing effort to develop a statistical knowledge base on teachers and teaching.

Key questions for educational policy-makers include: Do the status and working conditions of teachers reflect the importance of their role and the expectations of national stakeholders? Do educational policies reflect the awareness that advances in education depend largely on the qualification and ability of teaching staffs? What policy choices and trade-offs do countries make when establishing teacher work load, class sizes and teachers' salaries in order to balance the need for expanding access to education and attracting and retaining good teachers under limited budget constraints?

This report<sup>1</sup> aims at providing information to address some of these questions through internationally comparative analysis. It presents an array of indicators on teachers and the teaching profession, focusing on the areas of interest delineated in the report of the Fourth Special Session of the Joint ILO/UNESCO Committee of Experts on the Application of the Recommendation concerning the Status of Teachers – CEART (Paris, 1997). Specifically, this report is comprised of six sections:

- The first section outlines the context of teachers and teaching, first contrasting teacher demand and supply broadly between developed and developing countries before focusing on a selection of countries for which comparable data are available.
- The second section examines the composition of the teaching force in the different regions and countries, reviewing the demographic profile, the access of women to management positions, and the prevalence of part-time teaching.

- The third section provides a comparative analysis of the qualification of the teaching force, with a review of the pre-service training requirements of new teachers, the qualifications of the existing teaching force, and opportunities of continuing education and training.
- The fourth section examines conditions of service, including working time and teaching time, class sizes and salaries in both absolute terms and relative to national per capita income.
- However, teachers' working conditions are determined not by any of the above mentioned factors in isolation but by their combination. The fifth section is an attempt to put the puzzle together and to analyse how changes in these structural characteristics of education systems affect teaching and learning conditions and translate into higher or lower teaching costs per student.
- The concluding section lists some of the data gaps and methodological difficulties that continue to limit the development of a comprehensive statistical profile of the status of the teaching force and service conditions and provides some recommendations for future data development.

This report draws on information from various sources including the European Network for Information in Education (Eurydice), International Bureau of Education (IBE), International Labour Office (ILO), Organization for Economic Cooperation and Development (OECD) and United Nations Educational, Scientific and Cultural Organization (UNESCO). While UNESCO and ILO have the largest geographical coverage, comprising all countries of the world, the data available from these Agencies cover only some of the aspects considered. Conversely, a richer array of indicators is provided by Eurydice and the OECD. The OECD, in particular, has recently developed more advanced methods of data collection and analysis and in many respects is leading the field of education statistics and indicators. For this reason, although the report presents UNESCO and ILO data whenever possible to illustrate both the current situation and changes over time at global level, much of the information presented is for the OECD (and other European) countries and for some non-member countries that are currently working with the OECD and UNESCO on establishing comparative standards and methods.

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<sup>1</sup>This report was initially drafted as a contribution to the preparation of background documentation for the Seventh Session of the Joint ILO/UNESCO Committee of Experts on the Application of the Recommendation concerning the Status of Teachers (Geneva, 11-15 September 2000) and updated in 2001-02 with the most recent available data.







# 1. The context of teaching

Teachers' demand and supply balances provide a rough indication of both levels of investment in educational provision and the general context that contributes to determine pre-appointment requirements and working conditions of teachers.

## 1.1. Changes in teacher demand and supply

As indicated by UNESCO statistics, with a world total of almost 59 million in 1997, teachers represent some 1.6 per cent of the world population in the age group 15-64 years and by some estimates the largest single group of professionals in the world. The growth in the number of teachers (figure 1) has been driven by a combination of growing school-age populations and rising enrolment rates.

**The pressure to provide more teachers has been greatest in the developing world, which currently accounts for over 95 per cent of the world's population growth**

The total number of teachers in formal education systems (in all countries and at all levels) increased by more than seven million in just seven years, rising from 52 million in 1990 to 59 million in 1997. More than

two-thirds of these teachers are employed in developing countries (which, in relation to this data set, includes many middle-income countries), where their share with respect to the world total increased from 63.5 to 65.7 per cent between 1990 and 1997.

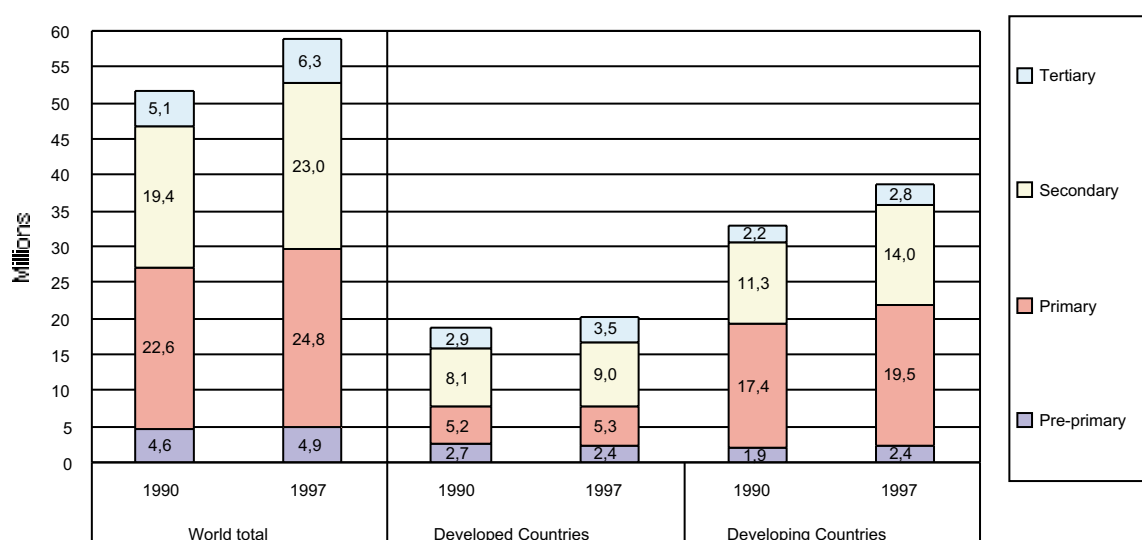
**Although the number of primary schoolteachers has increased steadily in the developing world ...**

Between 1990 and 1995 the number of primary teachers has increased on average by almost 9 per cent in the developing countries, with a low of 2.2 in Eastern Asia and Oceania and a high of 25.5 in the Arab States, and by 17.5 per cent in the group of the least developed countries.

**... these increases were, on average, counterbalanced by comparable growth in the number of school-age children...**

The size of the population of official primary school age has grown correspondingly, increasing by 9 per cent in the developing countries, with a low of 3.5 per cent in Latin America and the Caribbean and a high of more than 16 per cent in the African region south of the Sahara.

**Figure 1. Number of teachers in the world's formal education system by level of education, 1990-97**



*Note: The number of teachers is estimated on the basis of headcounts. The number of teachers may be underestimated, as in some countries the data refer only to the public sector.*  
Source: UNESCO, 1999.

**Table 1. Percentage increase in the number of primary and secondary schoolteachers and children and youth of school age, 1990-95**

	Primary schoolteachers (% increase)	Primary school age children (% increase)	Secondary schoolteachers (% increase)	Secondary school-age youth (% increase)
<b>Developing countries</b>	8.8	9.0	14.3	6.0
Sub-Saharan Africa	16.9	16.2	12.0	13.8
Arab States	25.5	15.1	23.8	9.0
Latin America and the Caribbean	12.2	3.5	11.6	5.9
Eastern Asia and Oceania	2.2	9.2	12.5	-4.5
Southern Asia	13.9	8.3	14.8	12.0
Least developed countries	17.5	12.5	16.4	13.9

*Note: Definitions of regions or country groupings are those utilized by UNESCO. (The UNESCO classification of the least developed countries comprises Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, Sao Tome and Principe, Sierra Leone, Solomon Islands, Somalia, Sudan, Togo, Tuvalu, Uganda, United Republic of Tanzania, Vanuatu, Yemen and Zambia.)*

Source: UNESCO, 1999 and UIS, April 1999 estimates and projections of school-age population.

The growth in the number of children of official primary school age, combined with efforts to expand access to basic education by reducing the size of the out-of-school population, have created strong pressures on the demand for qualified teachers at the primary level in many developing countries.

### **... so that the ratio of primary-age cohorts to teachers in developing countries remains high**

The ratio of the total population of children of primary school age (including both enrolled and out-of-school children) to teachers remains high in the group of the least developed countries, in sub-Saharan Africa and in Southern Asia, with an estimated mean of 57, 50 and 47 children of primary school age per teacher respectively (data 1995). The situation is exacerbated by significant numbers of secondary school age youth who are enrolled in primary education, as repeaters or late entrants. In some countries these represent over one-third of primary enrolment.

### **The increases in the number of secondary teachers have to be considered against the persistently large numbers of out-of-school youth**

At the secondary level, the number of teachers has grown even more markedly over the same period, with a percentage increase ranging from 11.6 per cent in Latin America and the Caribbean to 23.8 per cent in

the Arab States, while the youth of the (country specific) official secondary education age group increased on average, in the developing countries, by 6 per cent. However, the size of the out-of-school population of secondary school age – more than 228 million, amounting to almost half of the total youth population of secondary school age (527 million) in 1995 – gives an indication of the demand for qualified teachers that developing countries will need to meet in the future.

Despite the efforts made during the 1990s to achieve the goals of the World Conference on Education for All that was held in Jomtien in 1990, many countries still experience severe shortages of teaching personnel and continue to face the challenge to train large numbers of new teachers at low costs and with few monetary incentives for retaining them. These continuing challenges form part of the concerns expressed, and the policy proposals for meeting them, at the World Education Forum held in Dakar in 2000.

## **1.2. Changes in pupil/teacher ratios**

The ratio of pupils to teachers,<sup>2</sup> which needs to be distinguished from class sizes,<sup>3</sup> represents an important indicator of the resources countries devote to education. Since pupil/teacher ratios are broadly correlated with levels of GNP per capita (UNESCO, 1998) decreasing the pupil/teacher ratios proves to be very difficult for some countries in the less developed regions even in situations where these ratios are clearly excessive.

<sup>2</sup> In this section, pupil/teacher ratios refer to the ratio between pupils and teachers based on headcounts, while student/teaching staff ratios refer to the ratio between full-time equivalent students and full-time equivalent teachers.

<sup>3</sup> The relationship between pupil/teacher ratios and class sizes is complicated by many factors including differences between countries in the length of the school year, the number of hours at which students attend class each day, the length of the teacher's working day, the number of classes or students for which a teacher is responsible (e.g. in systems of multi-grade teaching or multiple shifts of students with the same teacher), the division of the teacher's working time between teaching time and other duties, the grouping of students within classes and the practice of team-teaching (OECD, 2000a; see also ILO, 2000a).

Where countries face increasing constraints on education budgets, the decision to increase or decrease pupil/teaching staff ratios needs to be weighted against the goals of raising access to education, providing competitive teachers' salaries, or investing in school infrastructures, equipment and supplies.

**At a global level, pupil/teacher ratios range, between countries, from 9:1 to 72:1**

Pupil/teacher ratios in primary education vary greatly throughout the world from a low of nine students per teacher to a high of 72 students per teacher (UNESCO Institute for Statistics, 2000b). In 1998, three quarters of the 79 countries supplying these statistics for the 2000 EFA Assessment reported pupil/teacher ratios below 37:1, the number of such countries having slightly diminished since 1990. Over the same period, the number of countries reporting pupil/teacher ratios above 50:1 increased slightly, representing now around 11 per cent of the countries for which data are available.<sup>4</sup>

The following charts (figures 2-4) present student/teaching staff<sup>5</sup> ratios by level of education in the OECD countries and the countries participating in the OECD/UNESCO World Education Indicators programme (WEI). The ratios are obtained by dividing the number of full-time equivalent students at a given level of education by the number of full-time equivalent teachers at that same level and in the same type of institution.

**In general, higher levels of education witness lower student/teaching staff ratios**

The ratio of students to teaching staff at the primary and lower secondary levels varies considerably even across the group of OECD countries, ranging from 11 students per teacher in Denmark and Hungary to 32 in the Republic of Korea at the primary level, from ten in Austria to 35 in Mexico at the lower secondary level, and from ten in Norway to 27 in Mexico at the upper secondary level.

In general, the ratio of students to teaching staff ratio declines as the level of education rises. In the countries participating in the WEI project, student/teaching staff ratios are on average higher than in the OECD countries. The average ratio of student to teaching staff exceeds 34 students per teacher in the Philippines and Zimbabwe at the primary education level and in Mexico and Brazil at the lower and upper secondary education levels, respectively.

The relative position of countries for this indicator tends to remain fairly similar both for primary and secondary education in OECD countries, while larger differences in the student/teaching staff ratios between the primary and the secondary levels are found in the developing countries included in this comparison. These differences may indicate differences in the relative importance that countries pay to student access to teaching staff at a particular level of education, but they may also reflect delays in the adaptation of the teaching force to changing demographic conditions, changes in demand for education at certain levels, or differences in teaching hours for teachers at the different levels of education.

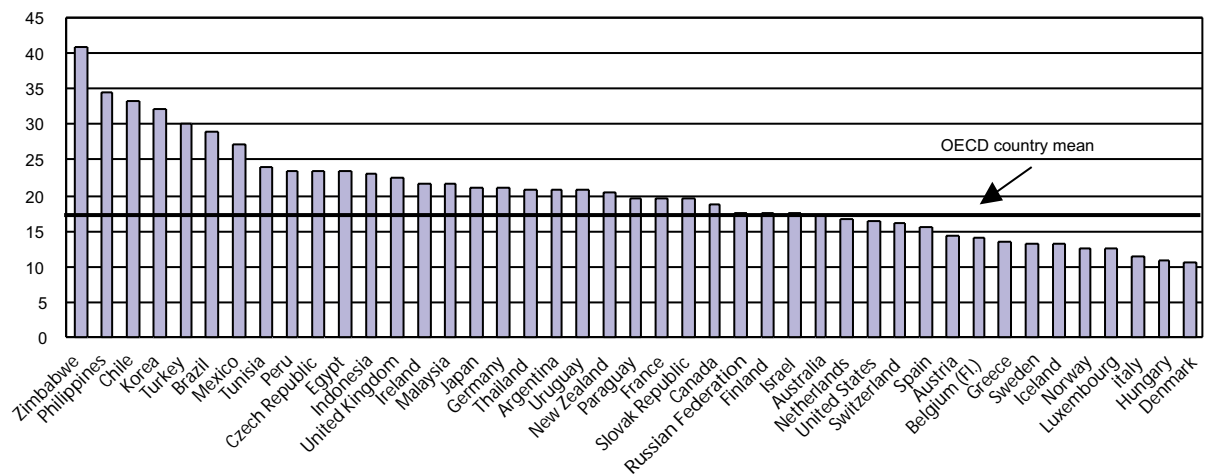
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*4 Many countries provided figures based on headcounts rather than the full-time equivalent number of either pupils or teachers. Pupil/teacher ratios based on headcounts of teachers tend to underestimate the true ratio in systems with relatively high proportions of part-time teachers.*

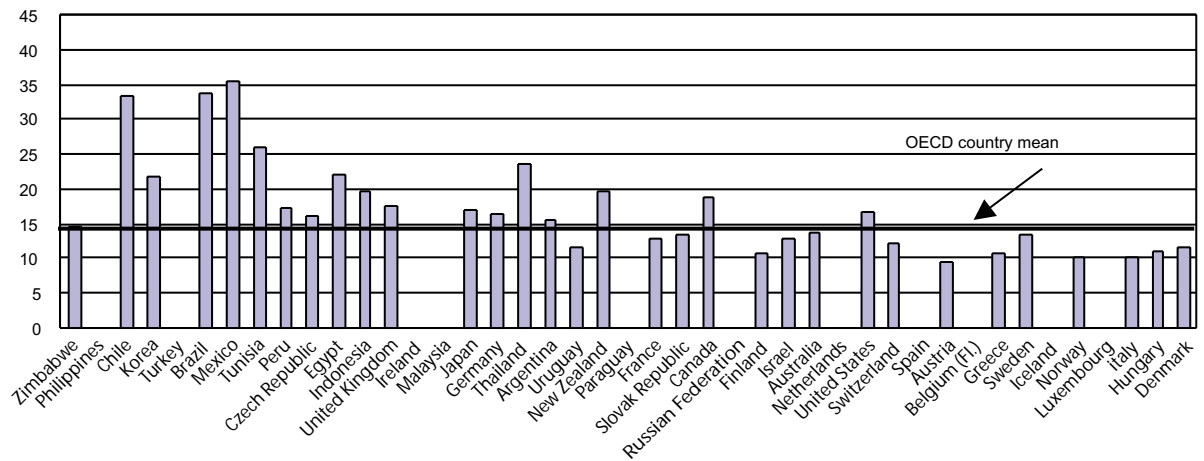
*5 Professional personnel classified as "teaching staff" includes classroom teachers, special education teachers, other teachers who work with students as a whole class in a classroom, in small groups in a resource room, or one-to-one inside or outside a regular classroom, and chairpersons of departments whose duties include some teaching time.*

Figures 2-4. Ratio of students to teaching staff by level of education (based on full-time equivalents), 1999

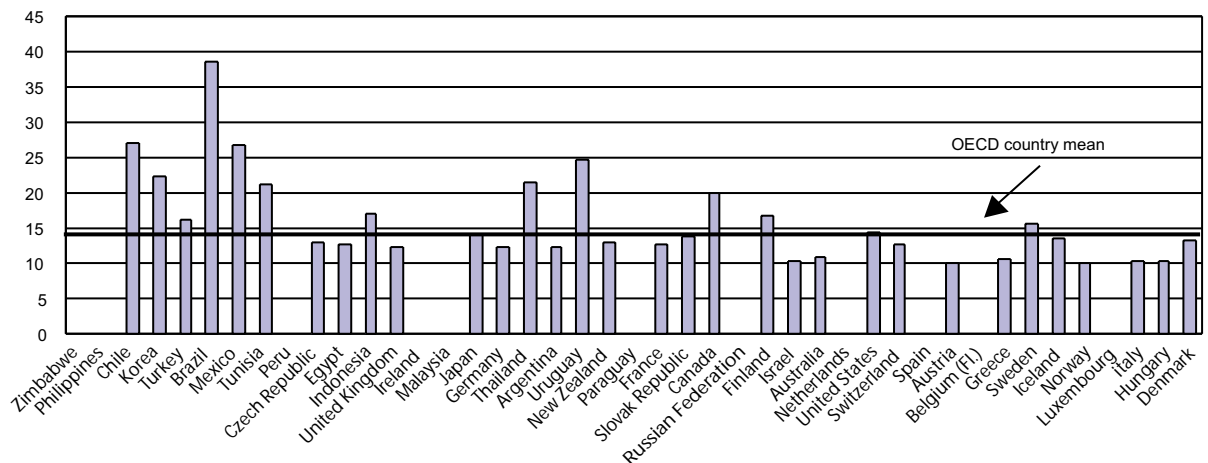
Primary education



Lower secondary education



Upper secondary education



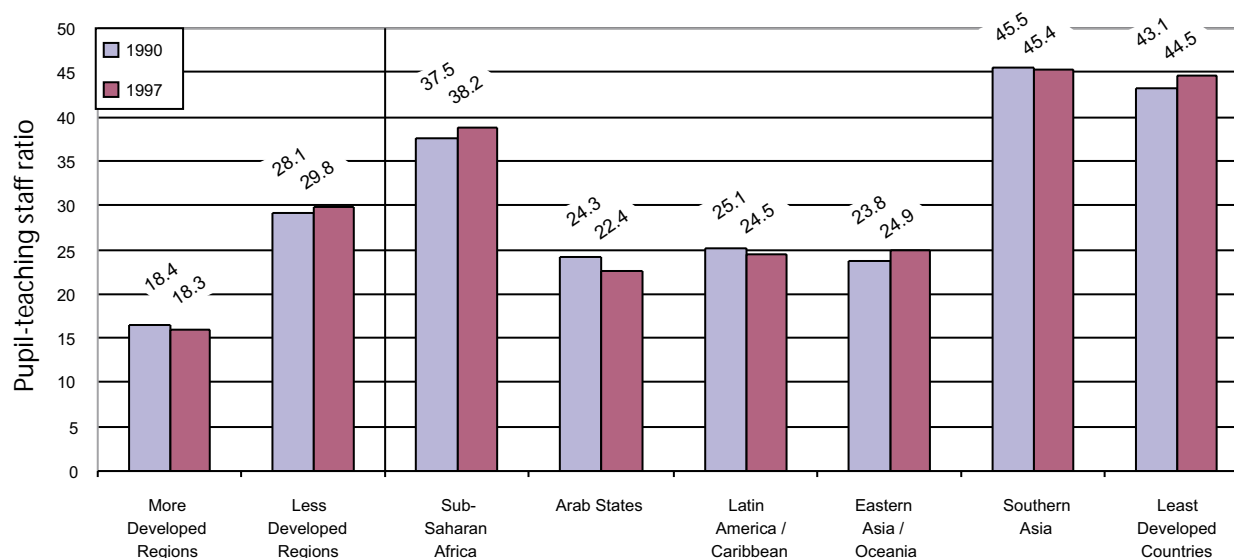
Note: Countries are ranked in descending order of student/teaching staff ratio at the primary level of education.  
Source: OECD, 2001.

**In developing countries pupil/teacher ratios are twice as large as in developed ones**

In the less developed regions, pupil/teacher ratios in primary schools are more than twice as large as those in the industrialized countries, while in the least develo-

ped countries they are nearly three times as large. The following chart (figure 5) presents pupil/teacher ratios in primary education by region, comparing the situation in 1990 with that in 1997 to assess the impact of the expansion of enrolment on the supply of teachers.

**Figure 5. Pupil/teacher ratios in primary education by region (based on headcounts) 1990-97**



*Note: Definitions of regions or country groupings are those utilized by UNESCO.*  
Source: UNESCO, 2000a.

In some cases, the regional averages hide large variations between countries and over time. In sub-Saharan Africa, for example, pupil/teacher ratios ranged in 1997 from less than 30 students per teacher in countries such as Botswana, Cape Verde, Ghana and Mauritania, up to more than 50 students per teacher in countries such as Benin, Central African Republic (77:1 in 1990), Chad (67:1), Congo (70:1), Gabon, Malawi, Mali (70:1), Mozambique and Senegal. Average values of the order of 70:1 mean that in these countries there are cases of more than 100 pupils per teacher. In some of these countries the situation deteriorated after 1990, such as for example in Benin, where the estimated pupil/teacher ratio grew from 36 to 56 between 1990 and 1997, and in Mali where the pupil/teacher ratio went from 47 to 71 during the same period. In other countries, conversely, the pupil/teacher ratio decreased significantly after 1990, such as for example in Burundi, where it went from 67 to 50 students per teacher between 1990 and 1997, and in Togo, where it went from 58 to 46. In Southern Asia, Afghanistan and India stand out (among the countries for which data are available) having an estimated ratio

of 58 and 47 students per teacher respectively, in 1997 (UNESCO, 1999). High pupil/teacher ratios, in some countries, are associated with double or even triple shifts of pupils during the day in the same school premises and with the same teacher. While allowing reductions in both the costs of school facilities and equipment and the costs of housing and training teachers, this has increased the burden on teachers and raises questions of the quality of education dispensed in such situations.

**High pupil/teacher ratios are associated with high rates of dropout in developing countries**

In many developing countries, high pupil/teacher ratios are among the factors associated with high dropout rates (Schleicher et al. 1995). This demonstrates the inextricable relationship between quantity and quality, so that where the quality of the provision deteriorates, enrolment levels tend to decline. Conversely, a decline in pupil/teacher ratios may indicate improvements in quality, provided that it is accompanied by increasing or stable enrolment ratios and low rates of repetition and dropout.



## 2. Composition of the teaching force

An analysis of the demographic composition of the teaching force can provide important insights into the state of the teaching profession. The following analysis focuses on two demographic variables, the age profile of teachers and the proportion of women teachers at different levels of education. The employment status of teachers is also considered.

### 2.1. Age profile

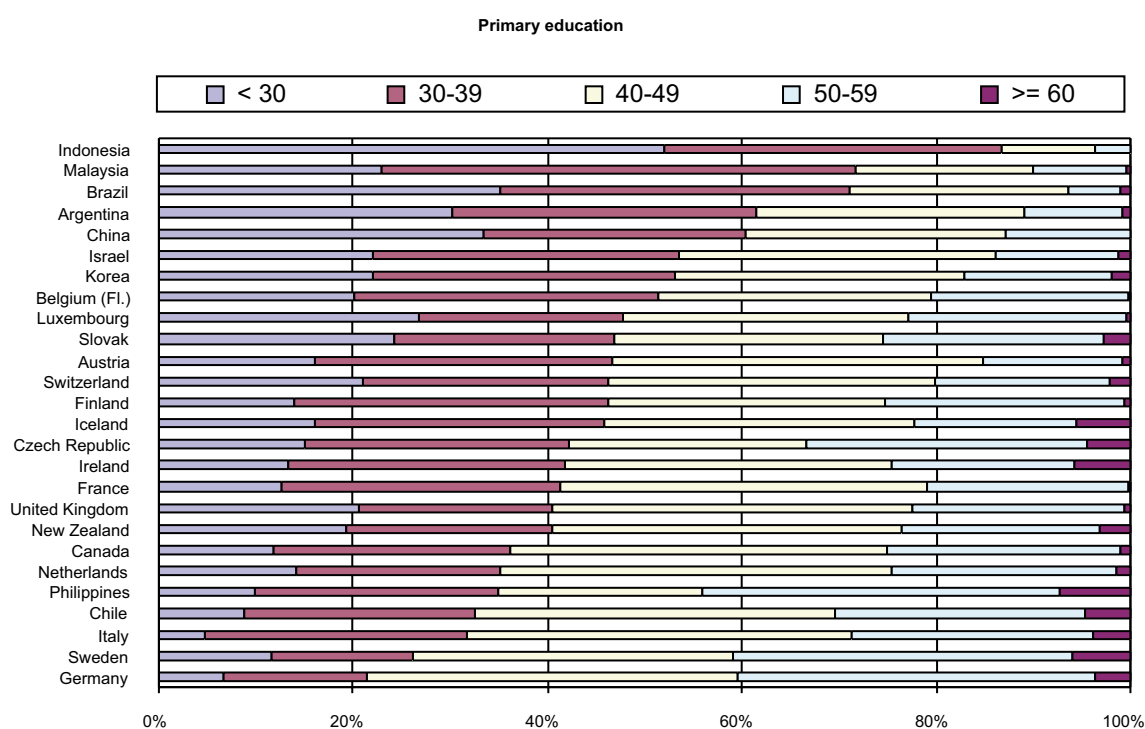
The age profile of the teaching force reflects not only the supply of teachers and the rate of renewal of the teaching force, but also provides a proxy for teaching experience. For countries with a very young teaching force, questions related to experience, staff turnover and guidance arise, while for countries with large numbers of teachers in their forties or fifties there are implications for future teacher shortages, and other questions of how to adapt teacher qualifications to changes in demand arise, not least in the rapidly

changing area of information and communications technology (ICT). Finally, countries with large numbers of older teachers reaching retirement age need to be concerned with forward planning of teaching staff requirements.

**The age profile of teachers shows different patterns in relation with the level of development of countries. In most OECD and other EU countries the majority of teachers are over 40 ...**

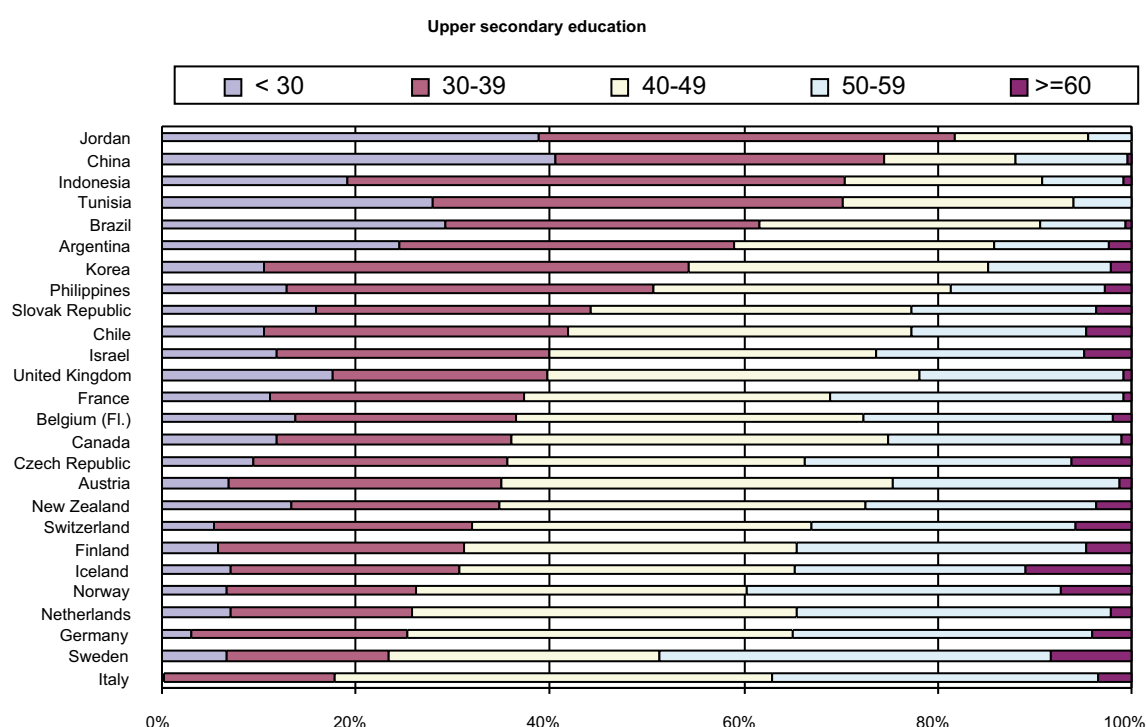
In many developed countries the age distribution of teachers is skewed towards the older age groups, particularly at the secondary level, a factor in recent concerns over emerging teacher shortages in these countries as large numbers reach retirement age. Among OECD and other European countries, only Bulgaria, Latvia, Lithuania and Estonia have 50 per cent or more of the teaching force aged below 40 at

Figure 6. Distribution of primary teachers by age group (headcounts), 1999



Note: Countries ranked in descending order of the percentage of teachers aged 40 and over.  
Source: OECD, 2001.

Figure 7. Distribution of upper secondary teachers by age group (headcounts), 1999



Note: Countries ranked in descending order of the percentage of teachers aged 40 and over.  
Source: OECD, 2001.

the primary level (Eurydice, 2000). Germany and Sweden have a relatively old teaching staff at the primary level, with over 70 per cent of teachers over the age of 40. The percentage of teachers under the age of 30 ranges from around a fourth in Luxembourg and the Slovak Republic to less than a tenth in Germany and Italy. At the upper secondary level, the pattern is similar in most countries, although teachers at this level tend to be older than primary teachers in Belgium, Finland, Italy, the Netherlands and Switzerland. Cross-country differences in the proportion of young teachers, as well as differences between levels of education within countries, can be explained, in part, by the typical completion age of pre-service teacher education and training.

**... while in many WEI countries the average age is much lower**

In four out of the eight WEI countries for which comparable data are available, over 30 per cent of primary teachers are under 30 years of age. In Indonesia, over 50 per cent of primary teachers are aged below 30 years. The proportion of younger teachers is large also at both the lower and upper secondary levels, where between 28 and 53 per cent of teachers in all countries except Chile are aged between

30 and 39 years. In China, Indonesia, Jordan and Tunisia, over 70 per cent of both lower and upper secondary teachers are under 40. A separate compilation of 14 countries from Africa, Latin America and Asia drawn from International Bureau of Education (IBE) data in the mid-1990s confirm this pattern: primary and secondary teachers under 40 ranged from over 60 per cent in Argentina to almost 90 per cent in Jordan (UNESCO, 1998). A smaller proportion of teachers fall into the 40 to 49 year-old age group, while up to 5 per cent of teachers are in the over 60 category in Chile and Israel. The large proportion of young teachers in these countries indicates the shortage of experienced teachers encountered in countries that are rapidly expanding enrolment and implies a need for systems of guidance and supervision. It also implies currently lower wage-bills, where average salaries increase with the ageing of teaching forces and their moving up the salary scale. In this respect, it has been observed that countries with fewer teachers in the older age groups, such as Brazil and Jordan, provide higher monetary incentives to the most experienced teachers, while countries with older teaching forces, such as the Philippines, pay relatively lower premiums to experienced teachers (OECD, 2000b).



**The proportion of teachers under 30 years of age is very high in some of the least developed countries, where there tend to be very few experienced teachers**

The proportion of younger teachers is highest in many of the least developed countries. In eight out of 14 countries that participated in a study on the conditions of primary school in the least developed countries (Schleicher et al., 1995), more than 45 per cent of the teaching force was aged 30 years or younger. In Bhutan, Burkina Faso, Cape Verde, Ethiopia and the Maldives the percentage of teachers aged 30 or younger ranged between 55 and 65 per cent. Several factors may contribute to this, including demographic growth and the expansion of enrolment in recent years, unattractive working conditions of teachers leading to high rates of early departures from the teaching profession for better paid jobs and a generally lower average life expectancy, including – more recently – the high rate of mortality among teachers due to AIDS in sub-Saharan Africa (Bennell, Hyde, Swainson, 2002)

## 2.2. Gender profile

**The percentage of women among teachers continued to rise during the 1990s**

The percentage of female teachers varies considerably across the world. However, it rose in all regions during the 1990s, continuing the trend observed during the 1980s. In general, the education sector is a more important source of employment for women than for men in developed countries, influenced by opportunities to combine employment and family responsibilities and better pay rates and career advancement potential relative to other occupations (Wyllie, 2000), whereas the opposite is often true in developing countries. The countries where teaching is still mainly a

male profession are mostly in sub-Saharan Africa and in South Asia, although also in these regions the 1990s marked a move towards slightly higher percentages of female teachers.

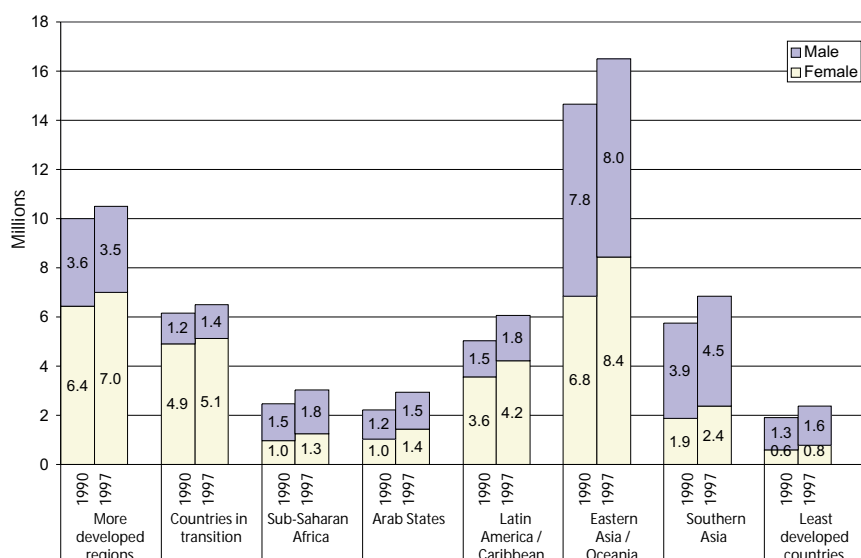
**In general women outnumber men at the lower levels of education, which are usually associated with lower remuneration**

Women generally outnumber men as teachers at the lower levels of education, which have traditionally been associated with a lower level of pre-appointment qualifications and lower salaries (see data in sections 3.1, 3.2, 4.3 and 4.4), although the trend is towards a reduction of these differences, especially in developed countries (Eurydice, 1995a).

In all regions, except the Arab States and Southern Asia, more than nine out of ten teachers at the pre-primary level are women. The proportion of female teachers is also very high at the primary level in the developed regions, the countries in transition and Latin America and Caribbean, whereas in the others, typically less developed regions, it is about 50 per cent or less. In general, it is in the regions where girls' access to school is lower (sub-Saharan Africa and Southern Asia in particular) that the percentage of female teachers is lowest, and in some sub-Saharan countries actually declining (Cavicchioni, forthcoming - Table 5b, Annex). At the secondary level, female teachers represent approximately half or more of the teaching force in the more developed regions and countries in transition and between 30 and 40 per cent in the less developed ones.

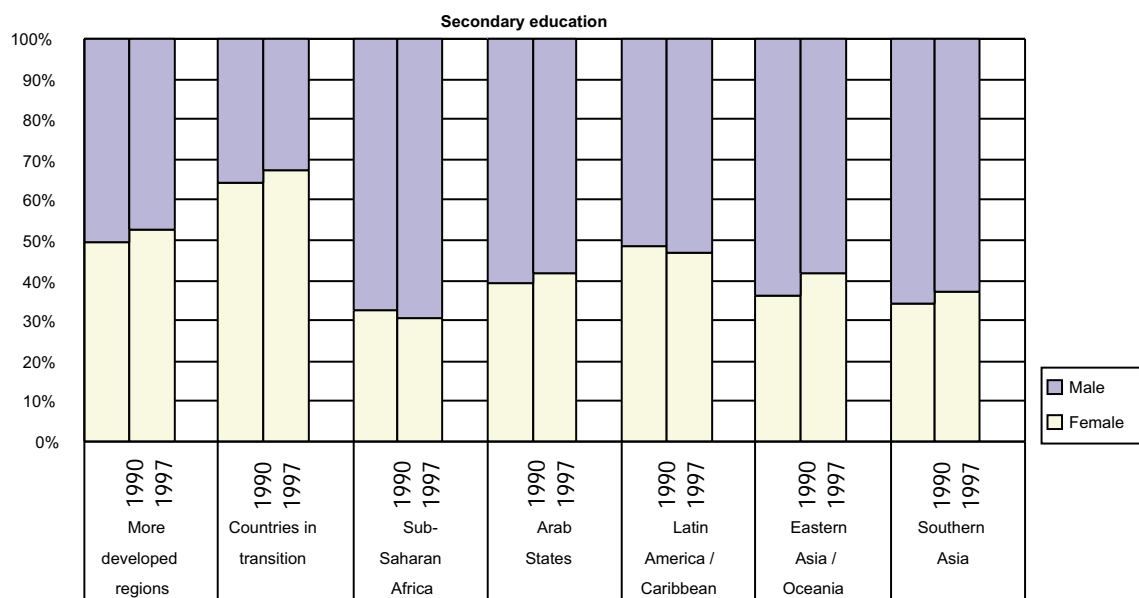
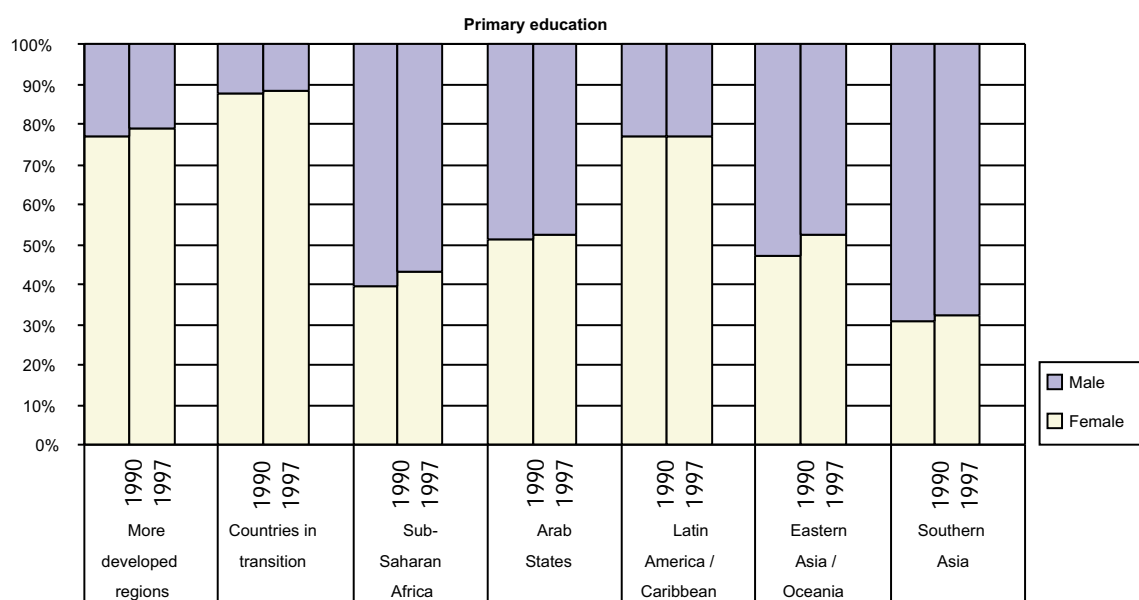
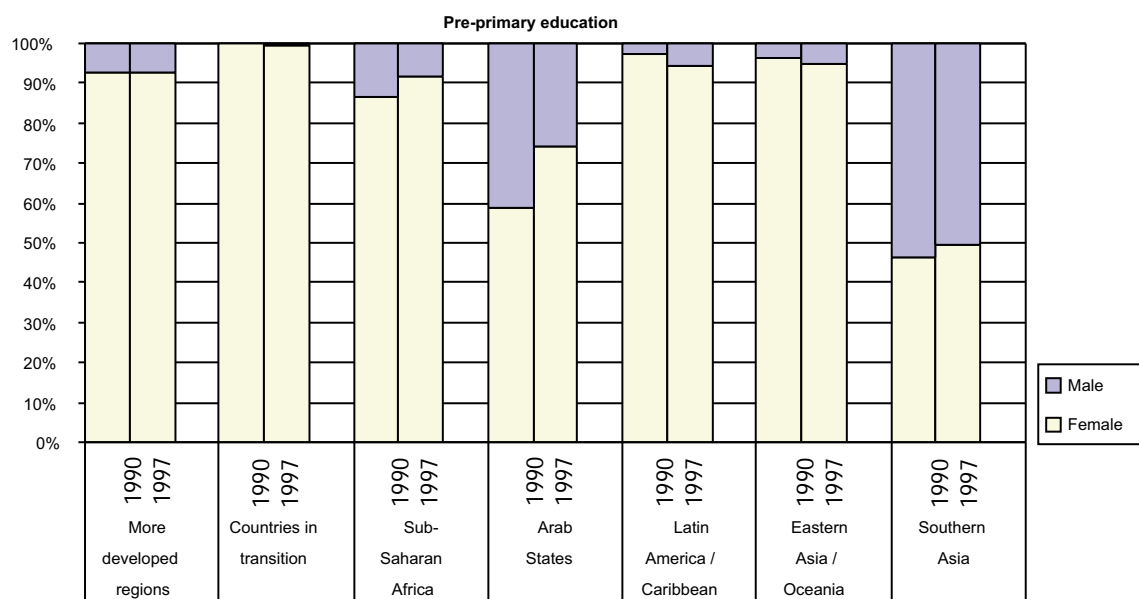
In most of the developing regions, the trend was towards higher percentages of female teachers at all levels of education between 1990 and 1998, the largest increase being recorded in the Arab States where the proportion of pre-primary female teachers increased by 16 percentage points during this period.

**Figure 8. Number of teachers in pre-primary, primary and secondary education by gender, 1990-97**



Source: UNESCO, 2000a.

Figures 9-11. Percentage distribution of female and male teachers by level of education, 1990-97



Source: UNESCO, 2000a.

In some countries, higher access of women to the teaching profession, especially at the basic levels, has been encouraged as a measure to increase enrolment of girls in regions with persisting gender disparities.

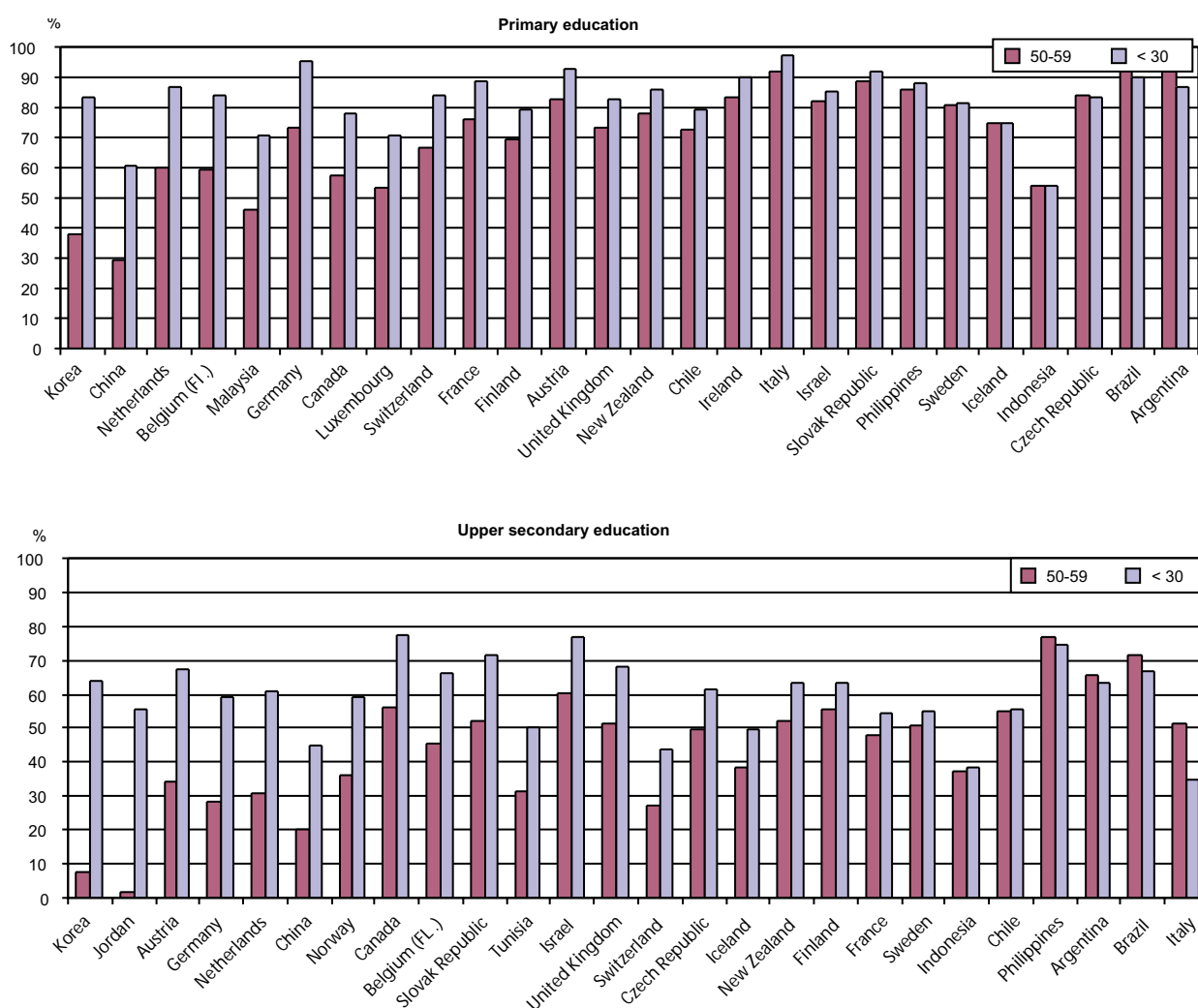
In the OECD countries, pre-primary and primary teachers are predominantly women, with 65 per cent or more female primary teachers in all countries except Denmark and Luxembourg (table 6 in Annex). In secondary education the percentages of male and female teachers show a greater level of similarity, and men outnumber women in vocational upper secondary education in most countries. Nevertheless Wylie (2000) has shown that over time, levels of feminization of the primary and secondary education are increasing or stable in all OECD countries. At the tertiary level, which is generally associated with much higher salary levels and professional status, male teachers make up the majority in all countries for which data are available (OECD, 1997).

The breakdown of the percentage of women by age bands gives an indication of the trend in the "feminization" of the teaching forces (figures 12 and 13).

**In most OECD countries, the proportion of women is higher among younger teachers**

In almost all OECD countries for which comparable data are available, the percentage of women is higher among younger teachers than among older ones. The Republic of Korea is the OECD country where the feminization of the teaching force proceeded at the fastest pace: the proportion of women among teachers aged under 30 is 45 percentage points higher than among those aged 50-59 years at all levels of education. Other countries that have a higher proportion of women in younger groups of teachers include the Netherlands, Belgium and Germany at the primary level (with differences among age groups that range between 22 and 27 percentage points) and Austria, Germany, and the Netherlands at the secondary level (with differences ranging between 30 and 33 percentage points). Among the countries participating in the WEI programme, the highest increases in the proportion of women teachers are observed in China and Malaysia at the primary level and in Jordan and China at the upper secondary level.

**Figures 12–13. Percentage of women teaching staff aged 50-59 and below 30 as percentage of all teachers (headcounts), 1999**



Note: Countries are ranked in descending order of the difference in the percentage of female teachers among teachers aged 50-59 and teachers aged below 30.  
Source: OECD, 2001.

These data, however, do not permit to establish whether the lower percentage of women at the older age groups is exclusively due to the feminization of the teaching force, or to the fact that women may be inclined to leave the profession more easily as a result of different life-cycle events, such as marriages, child rearing, etc.

### 2.3. Percentage of women in management positions

The access of women to directing positions in schools is one of the indicators of gender disparities in the education sector and in the labour force in general.

#### Women are still underrepresented in management positions

Despite the increasing feminization of the teaching profession, women are still underrepresented in management positions in schools in the majority of countries (UNESCO 1998). A survey on gender differences in education in the EU countries revealed that women were far less likely than men to hold directing positions (Eurydice, 1995a). Only pre-primary schools that are separate from primary schools are largely under the responsibility of women.

Both in 1985-86 and 1992-93 the percentage of women heads was much lower than that of female teachers. Only in Scotland did it exceed 50 per cent at the primary level. At the secondary level the percentage of women heads was even lower, with less than one-third of such positions occupied by women, except in Ireland (42 per cent in 1993). However, in all countries supplying data except Belgium and, at the secondary level, Scotland, the percentage of women heads

increased between 1985 and 1993. Data reported for 1994-95 revealed continued incremental gains at both primary and secondary levels in a number of European countries (Eurydice, 1997). Noting similar patterns in these other OECD countries, Wylie (2000) has suggested that many factors may be playing a part in these patterns, including turnover rates, age profiles of head teachers, changing status of such positions which reduce attractiveness for men, and increases or decreases in the number of schools.

The trend towards greater prevalence of women in management positions (including both heads and deputy heads) is confirmed by ILO data on a larger selection of countries from all income groups (ILO, 1996a). In all countries that reported data, except Egypt, Jordan and Syria, the proportion of women managers in primary education increased between 1985 and 1994 and in some countries the increases were considerable. In various high- and middle-income countries the percentage of women in directing positions was over 60 per cent in 1994 (as in Singapore, among high-income countries, and Antigua, the Barbados, Estonia, Hungary, Jordan, Malta and Poland among middle-income countries). A similar trend is reported at the secondary level, where the increase in the proportion of women among school heads and deputy heads is positively correlated with the increase in the proportion of women teachers. However, women managers remain severely under-represented in some high-income countries (such as Australia, Cyprus, Denmark and Republic of Korea) and in most low-income countries reporting data.

**Table 2. Number of male and female heads and percentage of women heads, 1985/86-1992/93 (public and private sectors combined)**

	Primary education				Secondary education			
	1985-86		1992-93		1985-86		1992/-3	
	M and F	% F	M and F	% F	M and F	% F	M and F	% F
Belgium (fr)	2 168	40	1 639	37	770	31	803	27
Belgium (fl)	2 943	40	2 472	35	1 594	28	1 308	17
Denmark		20		25	–	7	–	11
France	–	–	–	–	6 849	23	12 305	29
Ireland	–	–	3 345	44	–	–	550	42
Italy	4 814	34	4 616	46	9 254	27	9 567	29
Luxembourg	a	a	a	a	24	8	29	14
Netherlands	8 794	12	8 287	13	–	–	–	–
Austria	–	–	3 333	48	–	–	–	–
Finland	1 220	16	1 234	23	499	16	500	18
Sweden	1 416	10	2 704	46	410	16	552	27
UK (W/E)	22 323	44	21 202	50	4 967	16	4 716	22
UK (SC)	2 310	61	2 278	71	424	3	404	3

Notes: "a" = data not applicable because the category does not apply. In Luxembourg schools have no heads, with inspectors supervising teachers. – = numbers not available.

Source: Eurydice, 1995a

## 2.4. Full-time and part-time teachers

The proportion of teachers working on a part-time basis can be an indication of the relative flexibility of the education labour market, of which the public sector has the largest share.

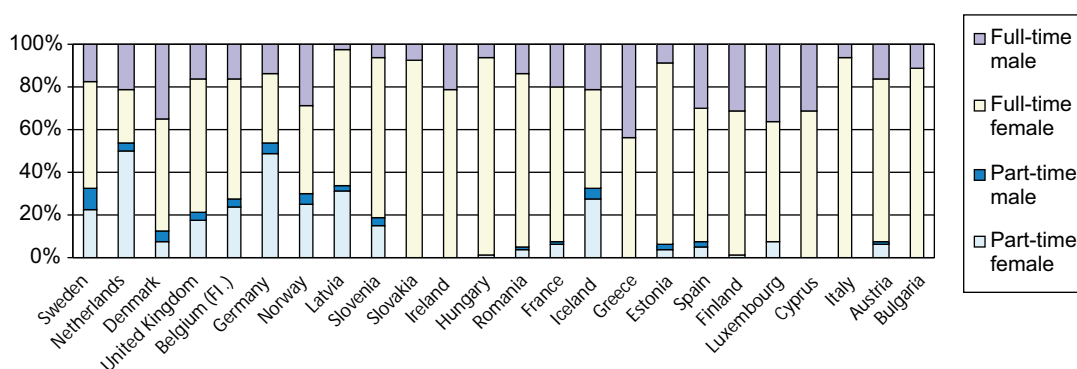
**In the developed countries, on average, less than one in five teachers works part time**

In all European and OECD countries for which comparable data are available, the majority of teachers are under full-time contracts. On average, less than one in five teachers works part time<sup>6</sup> at the primary and sec-

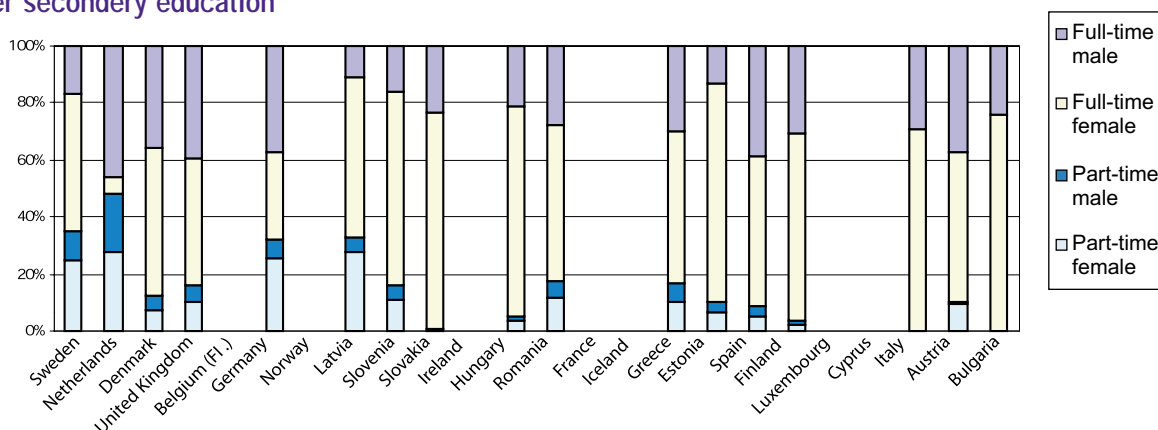
ondary levels taken together. In some countries the trend is upward, but this is by no means universal.

The proportion of teachers working part time varies considerably among European countries and by level of education, with typically a higher incidence of part-time work at higher levels of education. While in Italy all teachers are employed full time at all levels of education, in Sweden the percentage of part-time teachers at the upper secondary level makes up 74 per cent of the teaching force and in the Netherlands 59 per cent. In Germany and the Netherlands, however, 54 per cent of primary teachers work part time.

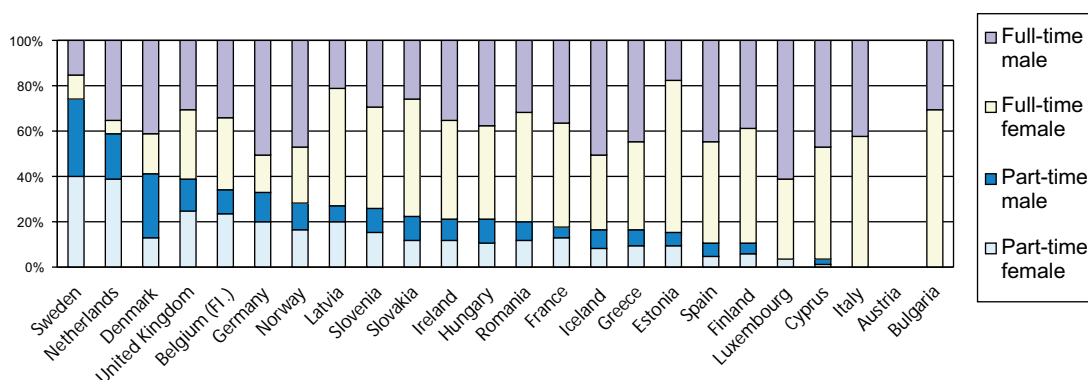
**Figures 14-16. Percentage of part-time and full-time female and male teachers by level of education, 1996-97**  
**Primary education**



**Lower secondary education**



**Upper secondary education**



Note: Countries are ranked in descending order of percentage of part-time teachers in upper secondary school.  
Source: UNESCO/OECD/EUROSTAT (UOE) (in Eurydice 2000).

<sup>6</sup> In the data presented in the charts, part-time teachers are defined as teachers whose work-load is lower than 75 per cent of the number of statutory working hours required of a full-time teacher.

### The majority of part-time teachers are women at the lower levels of education

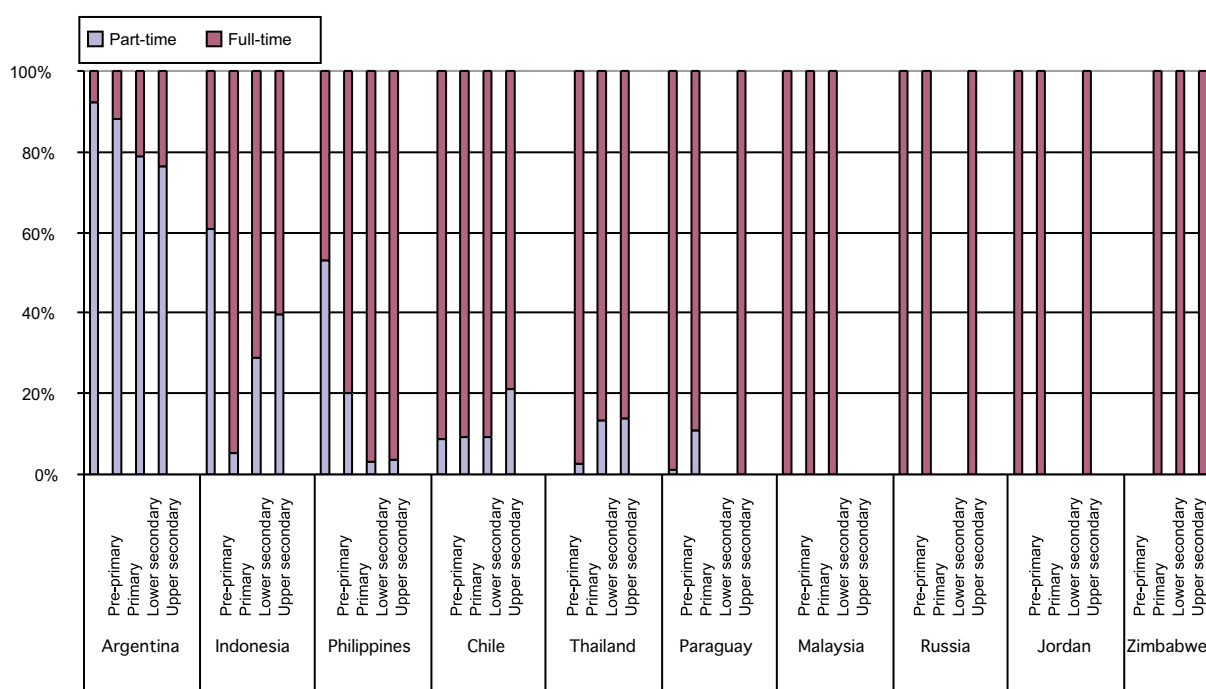
The majority of teachers who are employed part time are women at the primary and lower secondary levels while the distribution is more even at the upper secondary level. Although this reflects the gender composition of the total teaching force, the gender gap among the part-time teaching staff is even higher than among teaching staff employed on a full-time basis. Nevertheless, review of OECD data suggests that there is a clear-cut relation between the degree of feminization and the proportion of teaching jobs that are part time, in either primary or secondary education (Wyllie, 2000).

Large variations in the proportion of part-time teachers are also found among WEI countries. Among these countries, part-time teachers are not reported in

Jordan, the Russian Federation and Zimbabwe, while in Argentina they represent from 75 to more than 90 per cent of the teaching staff depending on the level of education. However, in some developing countries, high percentages of part-time teachers may be due to the fact that many teachers teach in more than one school, often a public one and a private one (thus being only part time in one particular school), because of the very low level of their public salaries.

In the three countries with the overall highest percentage of part-time teachers, that is Argentina, Indonesia and the Philippines, the highest proportion of part-time teachers is at the pre-primary education level, while in Chile part-time teachers represent more than 20 per cent of the teaching staff at the upper secondary level.

Figure 17. Percentage of part-time and full-time teachers by level of education, 1997



Source: OECD database (2000).



### 3. Pre-service qualifications and continuing professional development

The ILO/UNESCO Recommendation of 1966 stresses that advances in education depend on the qualifications and ability of the teaching staff in general as well as on the human and professional capacities of individual teachers. Pre-service subject matter knowledge and skills and professional training, “acquired and maintained through rigorous and continuing study”, are both essential prerequisites for an effective teaching force. The CEART has continuously upheld the validity of these principles for an effective teaching profession and quality education.

#### 3.1. Pre-service training requirements for new teachers

The qualification required for entry into the teaching profession is often used as a proxy for the quality of the educational inputs. Qualification requirements are also a key policy lever for governments to influence the quality of instructional delivery.

In general, it is important to distinguish between academic training (i.e. subject-matter instruction) and professional training (i.e. pedagogical instruction), which is often combined with periods of work experience. The ILO/UNESCO Recommendation considered

the completion of secondary education and some professional training as the minimum qualification level for prospective teachers. Since then, there has been a worldwide trend towards the generalization of pre-service teacher training at the level of tertiary education, either in university or non-university equivalent level institutions. This trend has been reflected in international recommendations on appropriate levels of training and professional development which advocate as a minimum a first-level university degree or its equivalent (ILO, 2000b). However, there are still differences among countries as to their position in respect to this trend, depending on their stage of development and of that of their education systems (UNESCO, 1998).

Fairly detailed and comparable data on the pre-service training requirements for teachers are available for the OECD countries, other European countries outside the OECD, and the developing countries participating in the OECD/UNESCO World Education Indicators programme. These data include information on the number of full-time equivalent years of teacher training formally required to become a fully qualified teacher for each educational level taught, the type of educational qualification obtained (e.g. ISCED 3, 5B, 5A)<sup>7</sup> and the organization of professional training<sup>8</sup>.

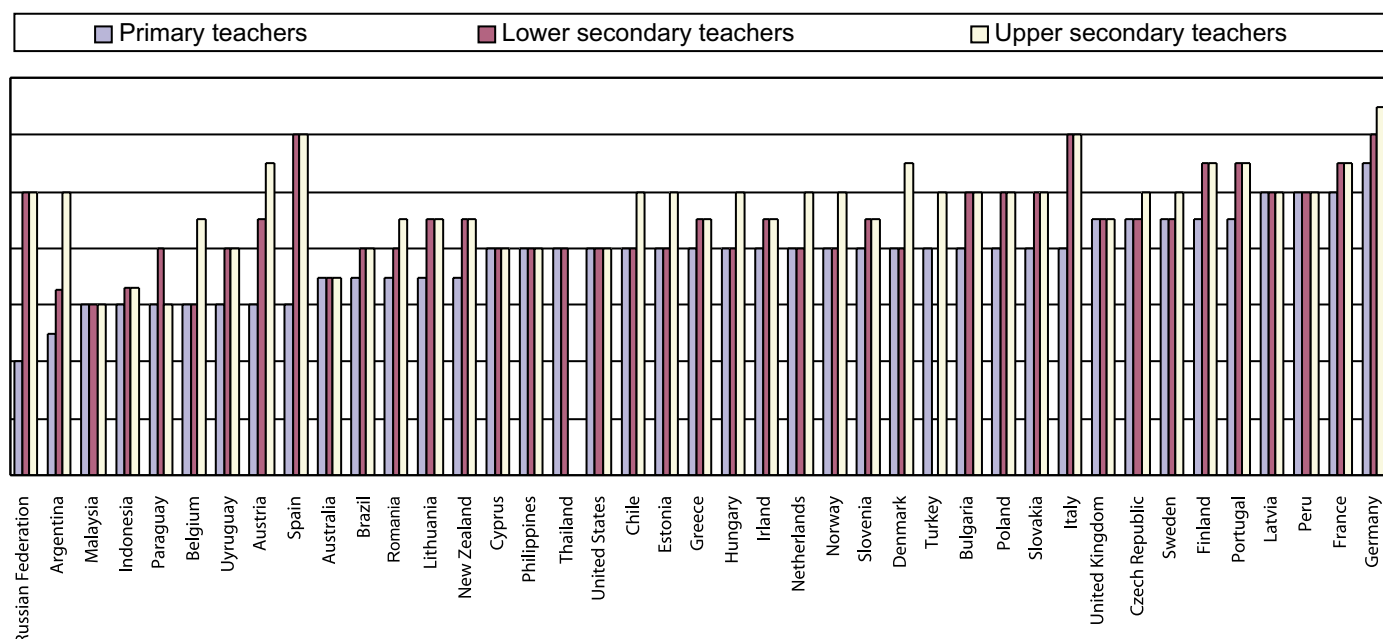
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7 All references to ISCED are understood to mean ISCED 1997. ISCED 3 are upper secondary qualifications. ISCED 5A and 5B are tertiary qualifications comprising the first stage of tertiary education. ISCED 5A programmes are largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skills requirements. ISCED 5B programmes are generally more practical/technical/occupationally specific than ISCED 5A programmes (ISCED-97 classification, OECD 2000a).

8 In systems where teachers have to work before being qualified, these years of practice have not been included. Data are from a OECD-INES Network C survey on pre-service training, from the 1999 OECD/UNESCO WEI data collection and from Eurydice (2000).



Figure 18. Number of years of post-secondary education required to become a teacher by education level, 2000



Note: The year of reference is 1998 for all EU pre-accession countries (Eurydice data).  
Source: OECD/UNESCO, 2001; Eurydice, 2000.

**Pre-service training ranges from three to five-and-a-half years for primary teachers and from three-and-a-half to six-and-a-half years for upper secondary teachers in OECD countries and other European countries**

In the OECD, the duration of pre-service training for primary teachers varies from three years in Austria, Belgium, and Spain to five-and-a-half years in Germany. For lower secondary teachers, the duration of pre-service training is higher than that for primary teachers in just above half of the countries, whereas it remains the same for all other countries. Pre-service training requirements for teachers at the upper secondary level are higher than those for teachers at the primary level in all countries except Australia, the United Kingdom and the United States, where training requirements are the same at all levels of education. Among the countries where the requirements for lower secondary teachers are already higher than for primary teachers, most do not require additional study time for the upper secondary level. Exceptions to this pattern are Austria and Germany, where requirements differ between all three levels. The average duration of training for upper secondary general teachers ranges from a minimum of three and a half years in Australia to six years or more in Germany, Spain and Italy.

**New primary teachers must earn a tertiary qualification in all developed countries and many countries in transition**

At the primary level of education and beyond, a tertiary qualification is required for entry to the teaching profession in all OECD countries (OECD, 2000a) as well as in the EU pre-accession countries for which

comparable data are available (Eurydice, 2000). In Austria, Belgium, Denmark, and Hungary an ISCED 5B qualification is required for entry to the profession at both the primary and the lower secondary level of education, while in Portugal, Bulgaria, Lithuania and Poland a Tertiary-type B qualification is only sufficient at the primary level.

For entry to teaching at the upper secondary level of education (general programmes), an ISCED 5A qualification is required in each of the countries presented here. With the exception of Denmark and some groups of teachers in Austria, an ISCED 5A qualification is also required for new teachers in upper secondary vocational programmes.

**Also all WEI countries train their teachers at tertiary level**

A tertiary qualification is required also in all WEI countries for entry into the teaching profession at all levels of education. The only partial exceptions are Brazil and Paraguay, where primary teachers have the choice of a secondary-level programme leading to an ISCED 3 qualification, or tertiary-level training. In Brazil, this secondary-level programme will however disappear by 2007 (OECD/UNESCO 2001). In some countries, primary to upper secondary teachers have the same qualification requirements, such as in Uruguay (ISCED 5B), and in Chile, the Philippines and the Russian Federation (ISCED 5A). In other countries, secondary teachers have higher qualification requirements, such as in Brazil and Malaysia (where an ISCED 5B qualification may be sufficient at the primary level, while a ISCED 5A qualification is needed to teach in secondary education). In other countries yet, such as in Indonesia, Peru and Thailand, prospective teachers



at all levels of education are allowed to complete their training by means of different paths leading to either ISCED 5B or ISCED 5A qualifications. Finally, while all WEI countries, like OECD ones, generally train their teachers at the tertiary level, the duration of the pre-service training is usually shorter in WEI countries than in OECD ones, especially at the upper secondary level.

### **Professional training can either be concurrent with subject matter instruction or consecutive**

In general, the length of the overall teacher training can also be affected by whether professional training occurs concurrently with subject-matter instruction, or consecutive, i.e. following the subject-matter course. In most countries, the consecutive organization of training tends to take longer than the concurrent one.

For teachers at the primary and lower secondary levels of education, the concurrent model of pre-service training is adopted in all OECD countries except in France, where pre-service training is organized according to the consecutive model, and in New Zealand, the United Kingdom and Ireland, where professional training can be either concurrent with or follow the completion of subject-matter studies. For teachers at the upper secondary (general) level, the organization of pre-service training varies more widely between countries. In Austria, Denmark, France, Ireland, Italy, the Netherlands, Norway and Spain, pre-service training is usually organized according to the consecutive model, while in Australia, the Czech Republic, Finland, Germany, Greece, Portugal and the United States it is usually concurrent. In Belgium, Hungary, New Zealand, Turkey and the United Kingdom, pre-service training can follow either models. Relevant work experience is also required to become a vocational teacher in some countries, such as in Austria, Finland, Denmark and Norway.

## **3.2. Qualifications of the existing teaching force**

Current pre-service requirements cannot serve as a proxy for the qualifications held by the existing teaching force. Pre-service teaching requirements have, in fact, changed substantially in many countries over the years, as it can be seen from the description of initial teacher training in the EU countries during the 20th century (Eurydice, 1995a). However, relatively few countries maintain information on the qualifications held by current teachers, which means that comparable data on this topic are limited.

One-third of the 83 countries that provided data on teacher qualification for the Year 2000 EFA Assessment (UNESCO Institute for Statistics, 2000b)

reported that all of their primary teachers had at least the minimum academic qualifications required by national authorities for teaching in primary education and eleven of these countries reported that their teachers had all received the minimum teacher training required. However, since both indicators are based on minimum national qualification and training standards, care should be taken in comparing countries, as these standards may vary greatly between countries. The academic qualification rates of teachers reported were often higher than teacher training rates. Some countries indicated that in order to meet the increasing demand for teachers in line with the rise in primary school enrolment rates, they had placed higher priority on recruiting staff with relevant academic qualifications, than on expanding the teacher training provision in their countries.

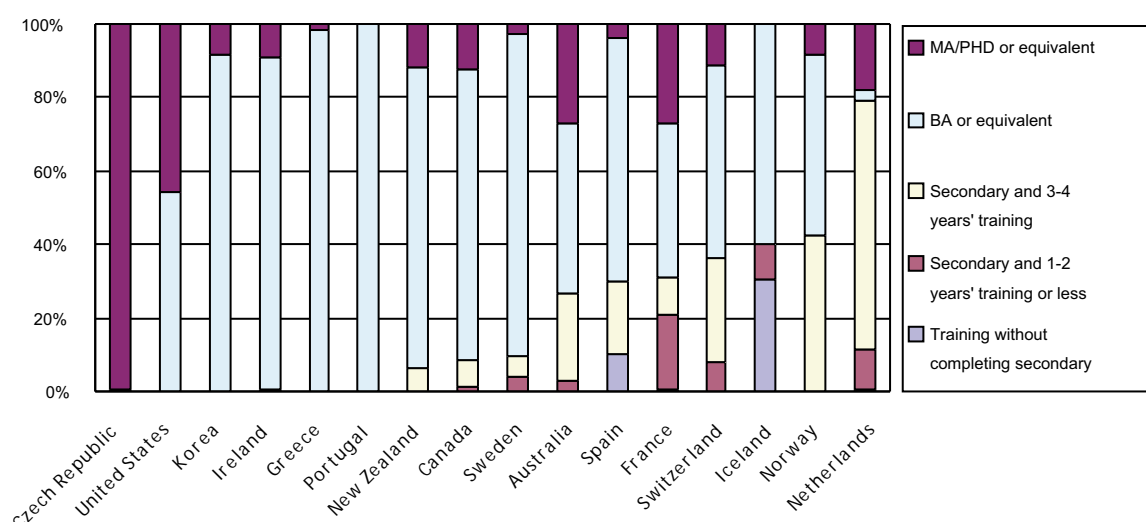
### **In at least half of the countries of almost all world regions more than 90 per cent of teachers meet the nationally defined academic qualification**

In almost all regions of the world the median proportions of teachers with the required academic qualifications were higher than 90 per cent, except in South and West Asia where it was 82 per cent. The median proportions of teachers reported to have received the minimum training required were around the same level in Central Asia, Central and Eastern Europe, and East Asia and the Pacific. In South and West Asia, sub-Saharan Africa and Latin America and the Pacific the rates were between 70 per cent and 80 per cent on average (UNESCO Institute for Statistics, 2000b).

However, in order to compare the level of qualification and training of the teaching force across countries, the level and length of the education and training course that corresponds to the required qualification in the countries concerned would have to be taken into account which is not generally possible.

One cross-national study that collected information on the level of education of current teachers is the Third International Mathematics and Science Study (TIMSS). In this study, the mathematics and science teachers of eighth-grade students provided information on their level of education. While the qualifications of mathematics teachers are not necessarily representative of the level of qualification of all teachers, this indicator does show the range of qualifications held by both new and experienced teachers in an important subject area.

Figure 19. Distribution of eighth-grade mathematics teachers by highest level of education completed, 1995



Notes: Countries are ranked in descending order of the percentage of eighth-grade students with mathematics teachers who hold at least a BA. The highest level of education is reported according to the IEA/TIMSS classification.

Source: International Association for the Evaluation of Educational Achievement (IEA); Third International Mathematic and Science Study (TIMSS) (in OECD, 2000a).

In nine out of 16 countries, over 90 per cent of the students are taught by mathematics teachers holding a bachelor's or higher degree<sup>9</sup>. Most teachers of eighth-grade mathematics students have at least some formal teacher training as part of their educational qualifications.

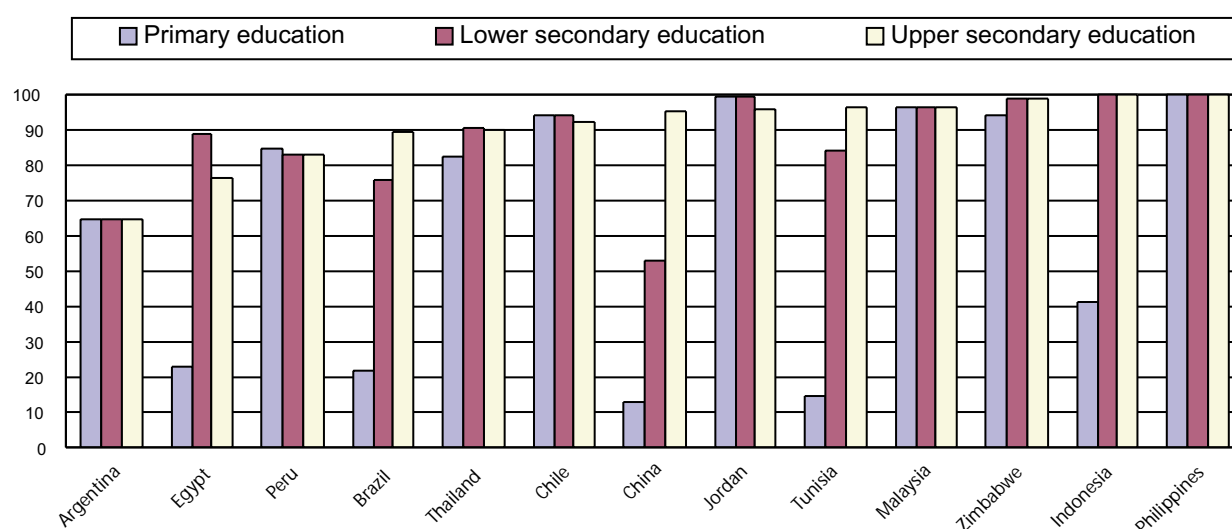
Information on the qualification of existing teaching staff is also available for the countries participating in the OECD/UNESCO World Education Indicators programme, where in general the majority of teachers have

obtained tertiary qualifications and undertaken some teacher training. In some countries there are, however, large variations between levels of education (OECD/UNESCO, 2001).

**All primary teachers have a tertiary qualification in Jordan and the Philippines, while these are less than two out of ten in China and Tunisia**

In ten out of 13 of the WEI countries, 90 per cent or more of the upper secondary teachers have a higher

Figure 20. Percentage of teachers with tertiary-level qualifications by level of education, 1999



Note: Countries are ranked in ascending order of percentage of upper secondary teachers with tertiary qualifications.  
Source: OECD/UNESCO, 2001.

9 To interpret the figures for the Netherlands correctly it needs to be taken into account that the programme followed by teachers in the Netherlands (Hoger Beroeps Opleiding, HBO: higher professional education), which was classified as a secondary programme and 3 or 4 years teacher training according to the TIMSS classification, is classified as a tertiary-type A programme in the ISCED-97 manual.

education qualification, their percentage being lower only in Argentina, Egypt and Peru. At the primary level, conversely, the number of countries with 90 percent or more of tertiary qualified teachers decreases to five. Brazil, China, Egypt and Tunisia are the countries with the largest variations in the level of qualification of the teaching force by level of education: the percentage of primary education teachers holding a tertiary qualification in these countries ranges between 13 and 23 per cent.

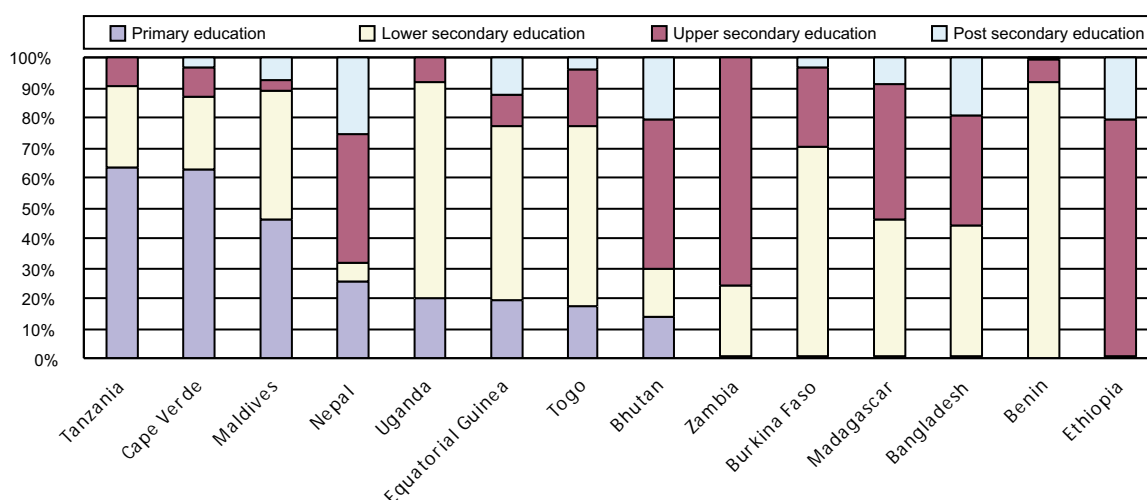
**In many of the least developed countries the majority of primary teachers have at most a lower secondary qualification**

However, there are a number of countries in the developing world that are still suffering severe shortages of qualified teaching staff. A survey sponsored by UNESCO and UNICEF on the conditions of primary schools in the least developed countries collected data on this from 14 countries.

In Cape Verde and the United Republic of Tanzania over 60 per cent of primary schoolteachers had obtained only a primary qualification in 1995, while in Benin, Burkina Faso, Equatorial Guinea, Togo and Uganda most teachers had obtained a lower secondary qualification. In Ethiopia and Zambia over half of the staff had an upper secondary qualification.

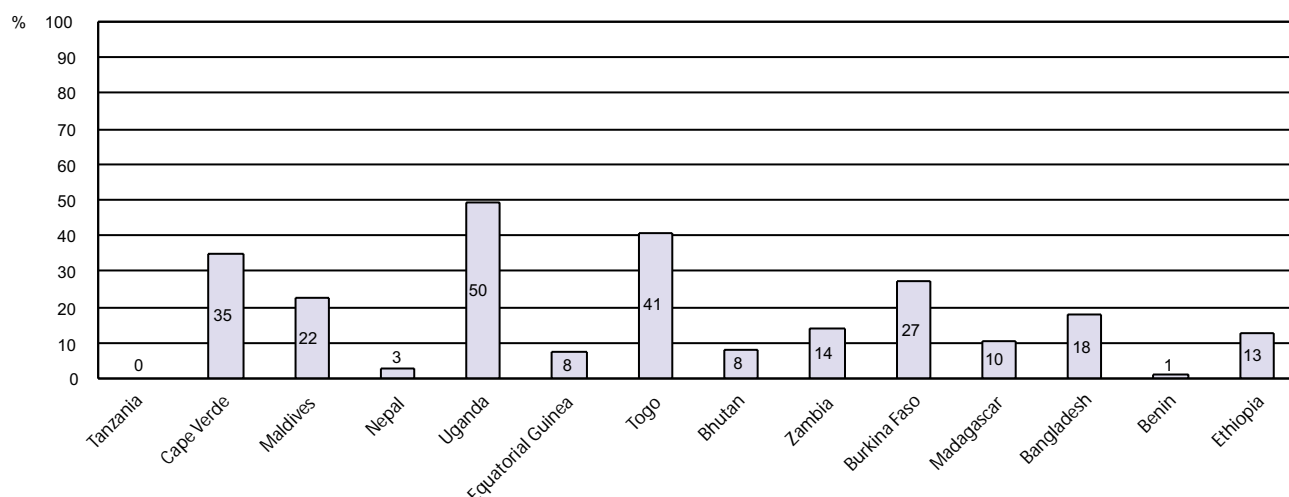
In Cape Verde, Togo and Uganda, some 30 to 50 per cent of the teachers had received no professional training. These data, together with those on the educational background of teachers, give an idea of the massive effort made in these countries to rapidly expand enrolment, employing primary or lower secondary school leavers with no professional preparation as teachers. Although the sample sizes do not allow for generalizations, these results give an indication of the kind of problems faced by these countries and the distance that remains to be covered to ensure that all teachers in the developing world have an upper secondary qualification and one or two years of professional training.

**Figure 21. Percentage of full-time primary teachers with different levels of education, 1995**



Source: Schleicher et al., 1995.

**Figure 22. Percentage of full-time primary teachers without any professional training, 1995**



Source: Schleicher et al., 1995.

### 3.3. The role of professional development

In-service training, continuing and further education, and the upgrading of teachers are different terms used to refer to teachers' continuing professional development. Although the main focus of teacher education in most countries continues to be on pre-service training, the need for in-service updating and renewing of knowledge, skills and capabilities is now widely acknowledged.

In developed countries the age structure of the teacher population indicates that, for the majority of teachers, 15 to 20 years have passed since they received their initial training. In developing countries substantive proportions of teachers have received virtually no training. Beyond these considerations, the pace of change in the knowledge and skills needed by students and the rapid development of the technology of education suggests that continuing professional development must be a priority for educational policy.

Unfortunately, there is little comparative information available. A recent review by the Centre for Education Research and Innovation – CERi – (OECD 1998c) examined developments in eight countries, noting some shifts from individual career-oriented training towards whole school development activities. It was observed that much professional training was fragmented, not sufficiently focused on the real needs and interests of teachers, and perceived by teachers as a top-down offer rather than as a participatory continuing education enterprise.

According to information from Eurydice, all EU countries support the right to in-service training by offering in-service training courses, although in only a few cases is training obligatory.

Where in-service training is obligatory, Scotland provides teachers with 50 hours of training during the school year plus five days outside the school year. In Sweden and in Finland teachers have five and three days per year respectively of in-service training.

In Greece, the initial training is extended by in-service training in which teachers have to take part three or four times during their career, every five or six years. In the other EU countries in-service training is generally on a voluntary basis, except in the case of individual promotion or reforms requiring particular training.

While it is difficult to measure the availability of in-service teacher training programmes or their acceptance and use by teachers, the financial resources invested in these provide another way to assess their volume and importance. A study in the European Union shows that, overall, only a small proportion of total education budgets are spent on in-service training (Eurydice, 1995b). In none of the European countries supplying data does the spending share for in-service training exceed 2 per cent, while in some cases it was much lower than 1 per cent. Although these figures suggest that investment in serving teaching staff still is of low priority for formal in-service teacher training programmes, other evidence needs to be taken into account, including the ways teachers spend their working time, in order to assess whether low costs are not due to a successful integration of the professional learning of teachers into the day-to-day operation of schools (OECD 1998b).

In the developing world, where substantial proportions of teachers do not meet newly introduced qualification and training requirements, in-service training is mainly aimed at upgrading teachers' qualifications and has a significant impact on educational budgets. Not all of this upgrading, however, takes place in educational institutions, as distance education is one of the approaches often used for this purpose.

The preparedness of governments to invest in the ongoing development of their teachers, through a coherent system of educational provision and incentives, as well as the willingness of individual teachers to invest in their own development, will be important for improving the quality of education.

**Table 3. Optional/obligatory nature of the provision of in-service training**

Courses only optional	Courses optional and obligatory	Courses optional and obligatory in specific cases
Belgium	Finland	For individual promotion:
Denmark	Greece	Portugal
England	Scotland	Spain
Germany	Sweden	
Italy		Specific initiatives of inspectors or for reforms:
Ireland		
Italy		Austria
Luxembourg		France
Netherlands		

Source: Eurydice, 1995b.



## 4. Teachers' working conditions

There is a clear link between the status of teachers and their working conditions, particularly their salaries and employment profiles. One of the guiding principles stated in the ILO/UNESCO Recommendation is that working conditions should be such that they will enable teachers to concentrate on their professional tasks, and promote effective learning by students. In particular, salaries should provide teachers with the means to ensure a reasonable standard of living and to invest in further professional development. They should also reflect the importance of the teaching function and take into account the qualification and experience required by teachers together with the responsibility they carry. Moreover they should compare positively with salaries paid in other occupations requiring similar qualifications.

### 4.1. Working time and teaching time

A teacher's contractual working time includes all working hours specified in the teacher's contract or conditions of service. It includes the statutory hours devoted to actual teaching as well as the statutory hours (when specified) devoted to teaching-related activities, such as lesson preparation, correction, in-service training, staff meetings, student support and extra-curricular activities.

Contractual working time represents an important element of teachers' working conditions and, together with class sizes, provides a measure of the workload of teachers. Besides, together with factors such as student/teaching staff ratios, students' hours of instruction and teachers' salaries, the amount of time teachers spend teaching and working outside the classroom influences the financial resources which have to be devoted to education. Governments paying teachers relatively high salaries may choose to impose greater workloads on teachers. Conversely, governments may limit teachers' workloads in order to attract people to a profession that might not be well paid. Other options include holding down salary increases so as to maintain levels of employment in times of austerity (ILO, 1996b).

Working patterns of teachers vary widely between countries, making it difficult to undertake international comparisons. In some countries, only teaching time is fixed and it is assumed that teachers will accomplish other duties without prescribing the time to be spent on these in their contracts. In other countries, teachers are also formally required to spend some time every day/week working on non-teaching activities. This non-

teaching time can be devoted to activities such as the preparation of lessons, correction of assignments and tests, professional development, support of students, and meetings with parents. In still other countries, teachers are required to be at school for a mandatory number of hours each week but the organization of this time is specified at the school level. In general, the non-instructional component of teachers' work has been estimated to account for between 10 and 50 per cent of a week's work in European countries (ILO, 2000a).

While teachers' working time is not directly comparable across these organizational models, data on working time can give an indication of the level of effort formally required of teachers in different countries. The following chart (Figure 23) presents the statutory number of working hours per week in primary education in all countries that supplied such data to ILO.

**Working time varies across countries from below 20 hours per week to over 40**

In Eritrea, Cambodia and Nicaragua primary teachers work 48 hours per week, which corresponds to the number of hours of three working weeks in Kyrgyzstan and Bolivia. In six out of 70 countries, teachers' statutory working time is lower than 20 hours per week, while in nine countries teachers are required to work more than 40 hours per week. These considerable variations in the workload of teachers are presumably due to the fact that, in the first group of countries, working time may not expressly include non-teaching activities, while in the second group of countries, the time to be spent on non-teaching activities may be prescribed in the contract or conditions of service of teachers. This, in turn, confirms the difficulty of comparing teachers' working time across countries.

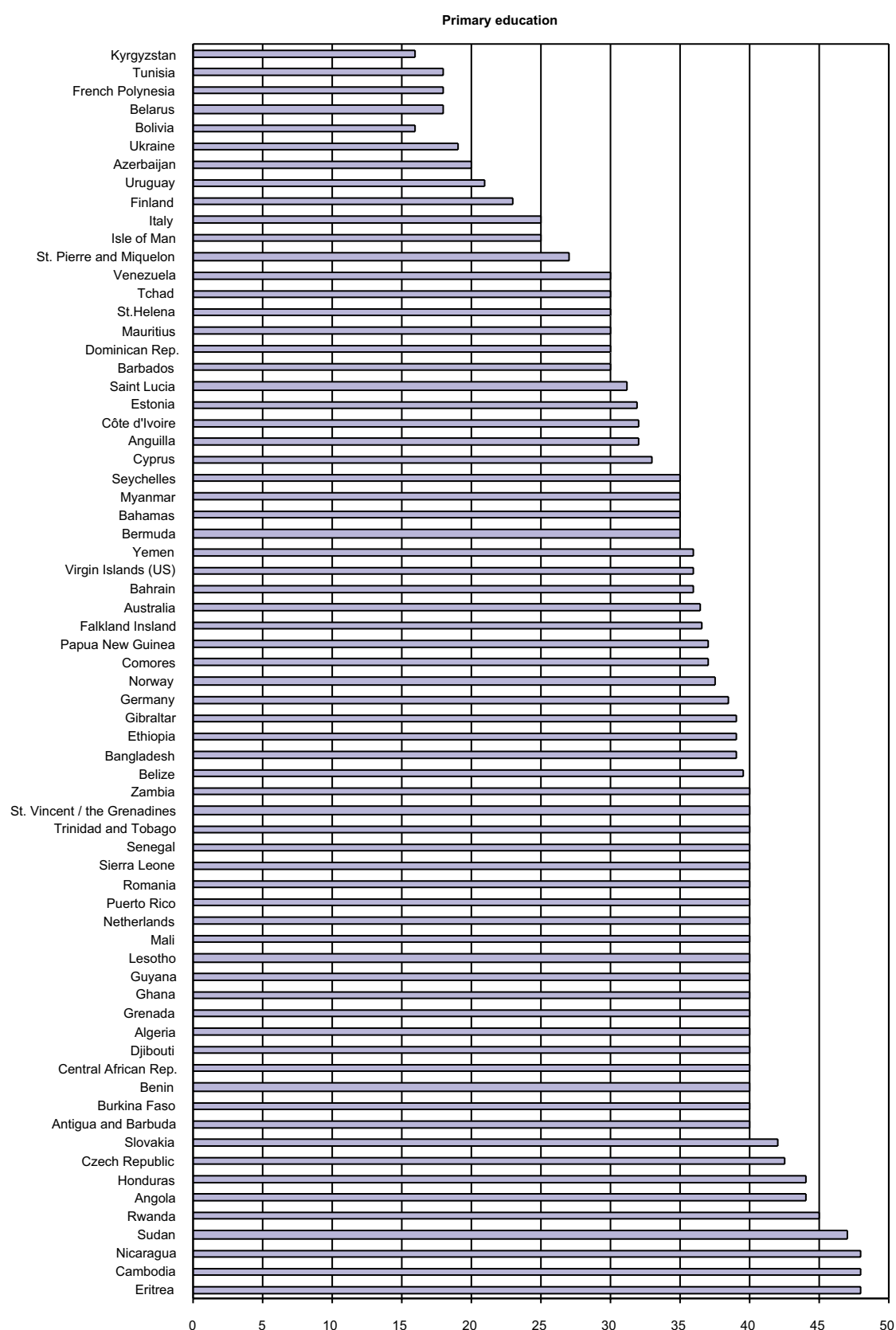
In some countries the number of specified working hours per week changed during the 1990s, decreasing by between three and 10 hours per week in six countries and increasing by between one and five hours per week in five countries<sup>10</sup> (see table 15 in Annex). In most of the countries the contractual weekly workload of teachers did not change, confirming the results of the 1996 ILO survey on working hours trends (ILO, 1996a).

Comparisons of working time to teaching time across countries are useful to explain, at least in part, variations in working time and the organization of the latter.

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<sup>10</sup> Between 1990 and 1999, the weekly working time decreased in Bermuda (by five hours), Belarus (by three hours), Côte d'Ivoire (by eight hours), Algeria (by four hours), Mauritius (by ten hours) and Chad (by ten hours). Conversely it increased in Finland (by two hours), Italy (by three hours), Sudan (by five hours), Cyprus (by one hour), St Vincent and Grenadines (by five hours).

Figure 23. Normal hours of work per week in primary education, 1999 or latest year available



Note: Latest year available for each country in table 15 in the Annex. The hours are normal hours of work as reported to the ILO. They do not distinguish between teaching and non-teaching, or between class contact and contractual, or salary hours.  
Source: ILO October Inquiry database.

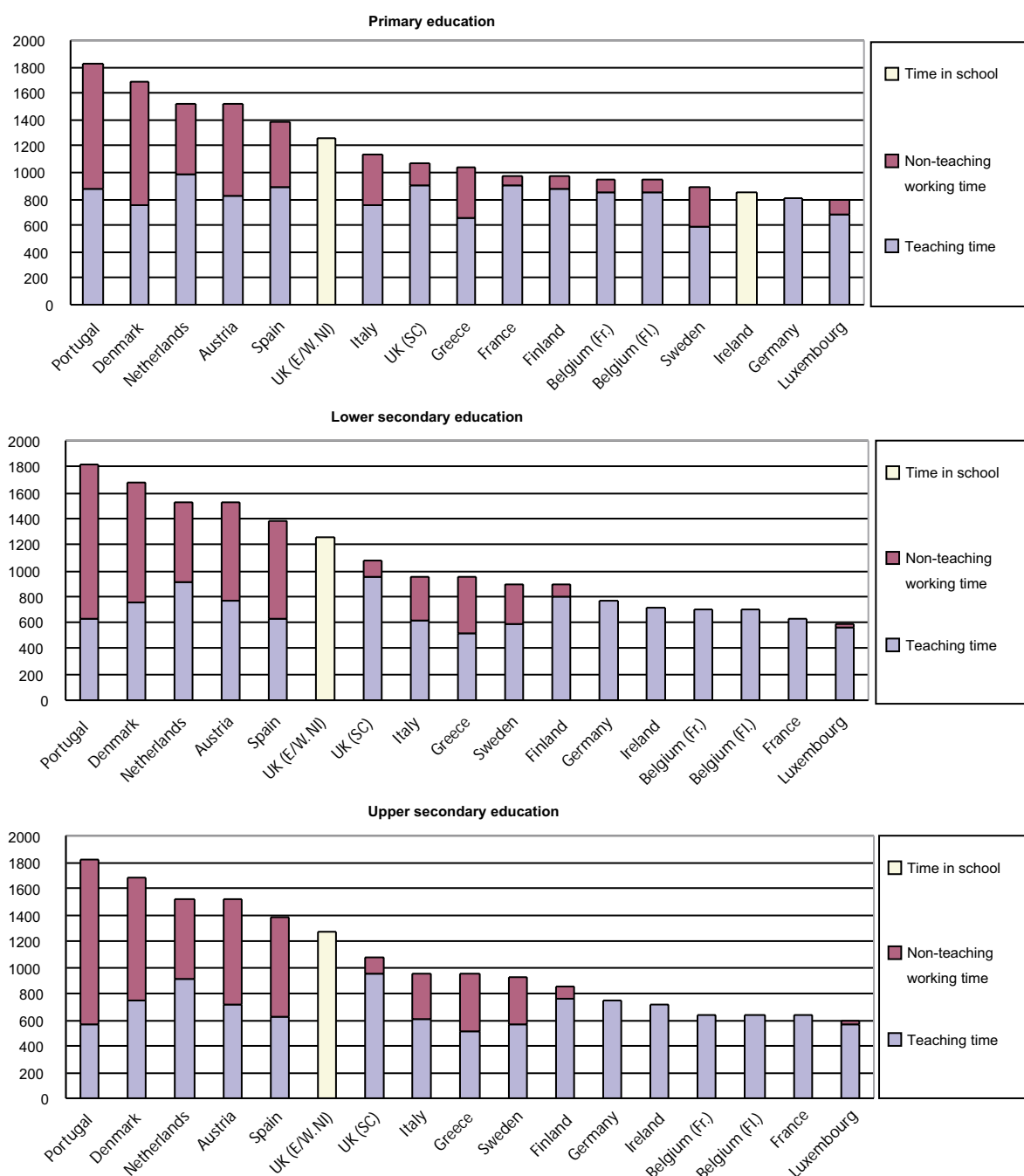


Teaching time is relatively uniform across EU countries, while the largest variations in working time are determined by the time prescribed for non-teaching duties

According to Euridyce data (Figures 24-26), most countries have some statutory time allocated to non-teaching activities in the school. In the case of England and Ireland (at the primary level), the working time allocated to teaching and other activities is specified by school heads, whereas in the other countries there is a statutory specification of how the working time of teachers is organized between teaching and other duties. While teaching time is relatively uniform

across countries, variation between countries in the total annual time that teachers are formally expected to work is primarily determined by the amount of time prescribed for non-teaching activities. At the secondary level, the shortest working time is found in Luxembourg, France, Belgium, Ireland and Germany, where full-time teachers are only required to be at school for the specified number of teaching hours. Conversely, the longest working hours are in Denmark, the Netherlands, Austria and Spain, where the load of formal non-teaching working time is the heaviest at all levels of education<sup>11</sup>.

Figures 24-26. Estimated annual teaching time and non-teaching working time, EU countries, 1992-93



Note: The average teaching and working time has been calculated for countries with minimum and maximum time specifications.  
Source: Euridyce, 1995a.

11 Portuguese teachers, who are reported by Eurydice as having the longest non-teaching working hours at all education levels, are reported in other sources as having some non-teaching duties (mathematics teachers in the eighth grade, TIMSS) or as being only required to be in school for teaching hours (OECD, 2000a).

An alternative source of information on teaching and working time comes from the Third International Mathematics and Science Study (TIMSS), where the mathematics teachers of eighth-grade students were asked about the weekly amount of time that they had formally prescribed to them for teaching and for non-teaching activities. The total scheduled time of eighth-grade mathematics teachers varies between 13 hours in Hungary and 28 hours in the Republic of Korea. In Belgium, Ireland and Norway, teachers of eighth-grade mathematics students reported that they spent less than two hours per week of formally scheduled time, on average, on non-teaching activities, while in the Czech Republic, Hungary, Japan, the Republic of Korea and the United States teachers spent ten hours or more. The latter countries, along with Canada and Sweden, tend to have the largest proportion of formally scheduled time devoted to curriculum planning. In most countries non-teaching time is devoted to the supervision of students (IEA/TIMSS, 1996).

A description of the structure of teachers' working time is available for OECD countries (table 4).

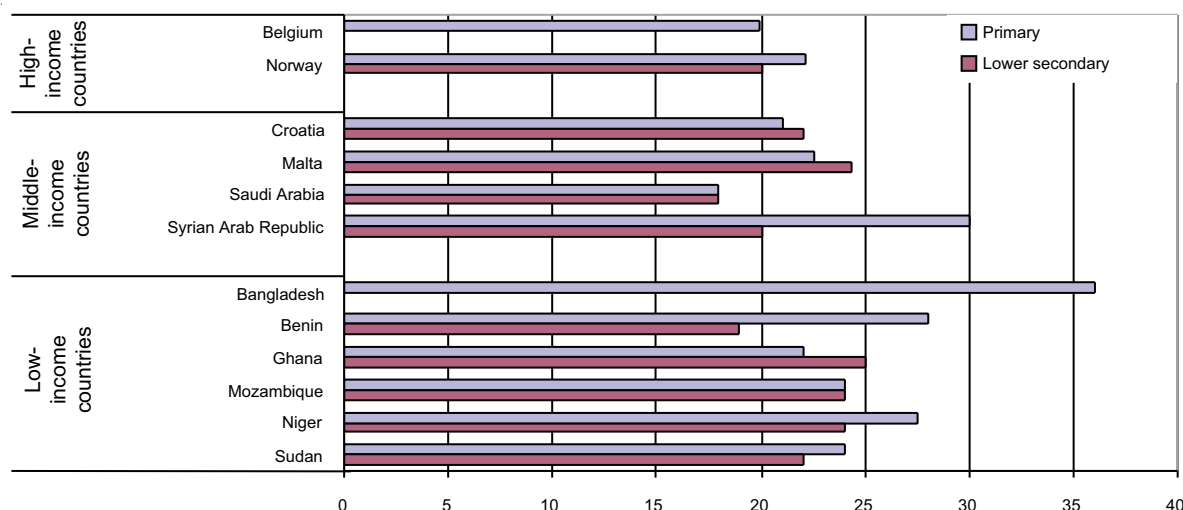
### Teaching hours are more comparable across countries than working hours

Teaching hours refer to the statutory time teachers are required to teach. The number of teaching hours per week provides an indication of the teaching load of a teacher in a typical working week, although it does not allow comparison with the overall teaching load. A lighter weekly workload may be coupled, for example, with a longer working year, while a high number of teaching hours per week may be compensated by longer holidays.

The weekly teaching load varies widely from a low of 18 hours for both primary and lower secondary teachers in Saudi Arabia to a high of 36 hours for primary teachers in Bangladesh and 25 hours for secondary teachers in Ghana (Figure 27)

These variations are confirmed by data on the statutory annual teaching time in the OECD countries and the developing countries participating in the OECD/UNESCO World Education Indicators programme<sup>12</sup>.

Figure 27. Average weekly teaching hours by level of education in selected countries, 1996-98



Source: IBE, 1999 (in ILO, 2000a).

<sup>12</sup> OECD defines teaching time as the total number of hours per year for which a full-time classroom teacher is formally responsible for teaching a group or class of students. If teaching hours are not formally prescribed at the central or regional level in a particular country, survey data on the amount of time that teachers actually spend teaching has been substituted (e.g., in the United States). Periods of time formally allowed for breaks between lessons or groups of lessons are excluded. Teaching hours per year are calculated on the basis of teaching hours per day multiplied by the number of teaching days per year, or on the basis of teaching hours per week multiplied by the number of weeks per year when schools are open for teaching. The hours per year that are accounted for by days when schools are closed for festivities and celebrations are excluded.



**Table 4. Structure and organization of teacher weekly working time by level of education, 1998-99**

**1a. Full-time teachers work a specified number of hours per week to earn their full-time salary, where working time is allocated for both teaching or non-teaching activities completed at school or outside school**

	Pre-primary	Primary	Lower secondary	Upper secondary General	Upper secondary Vocational
Australia	m	36.3	36.3	36.3	m
Austria	40.0	40.0	40.0	40.0	40.0
Czech Republic	42.5	42.5	42.5	42.5	42.5
Denmark	37.0	37.0	37.0	37.0	a
England	32.5	32.5	32.5	32.5	32.5
Germany	38.5-40	38.5-40	38.5-40	38.5-40	38.5-40
Greece	37.5	37.5	37.5	37.5	37.5
Hungary	40.0	40.0	40.0	40.0	40.0
Iceland	40.0	45.8	45.8	44.7	44.7
Korea, Rep. of	a	44.0	44.0	44.0	44.0
Mexico	20.0	25.0	25.0	m	m
Netherlands	36.9	36.9	36.9	36.9	38.0
Norway	a	44.0	44.0	44.0	44.0
Portugal	35.0	35.0	35.0	35.0	35.0
Scotland	a	27.5	27.5	27.5	a
Spain	37.5	37.5	37.5	37.5	37.5
Sweden	40.0	40.0	40.0	40.0	40.0

**1b. Both teaching and non-teaching activities are completed at school only**

	Pre-primary	Primary	Lower secondary	Upper secondary General	Upper secondary Vocational
Australia	m	34.7	34.9	34.9	m
England	32.5	32.5	32.5	32.5	32.5
Greece	37.5	37.5	37.5	37.5	37.5
Ireland	23.4	28.4	a	a	a
Scotland	a	27.5	27.5	27.5	a
Spain	30.0	30.0	30.0	30.0	30.0

**2. Full-time teachers are only required to be at school for a specified number of teaching hours. There is no requirement for how much time must be spent on non-instructional activities**

	Pre-primary	Primary	Lower secondary	Upper secondary General	Upper secondary Vocational
Belgium (Fr.)	23.3	23.3	20.0	18.3	27.5
Finland	17.3	17.3	17.3	16.5	m
France	27.0	27.0	15-20	15-20	18-23
Ireland	a	a	22.0	22.0	a
Portugal	25.0	25.0	18.3	18.3	16.7
Turkey	25.0	20.0	16.0	14.0	26.7

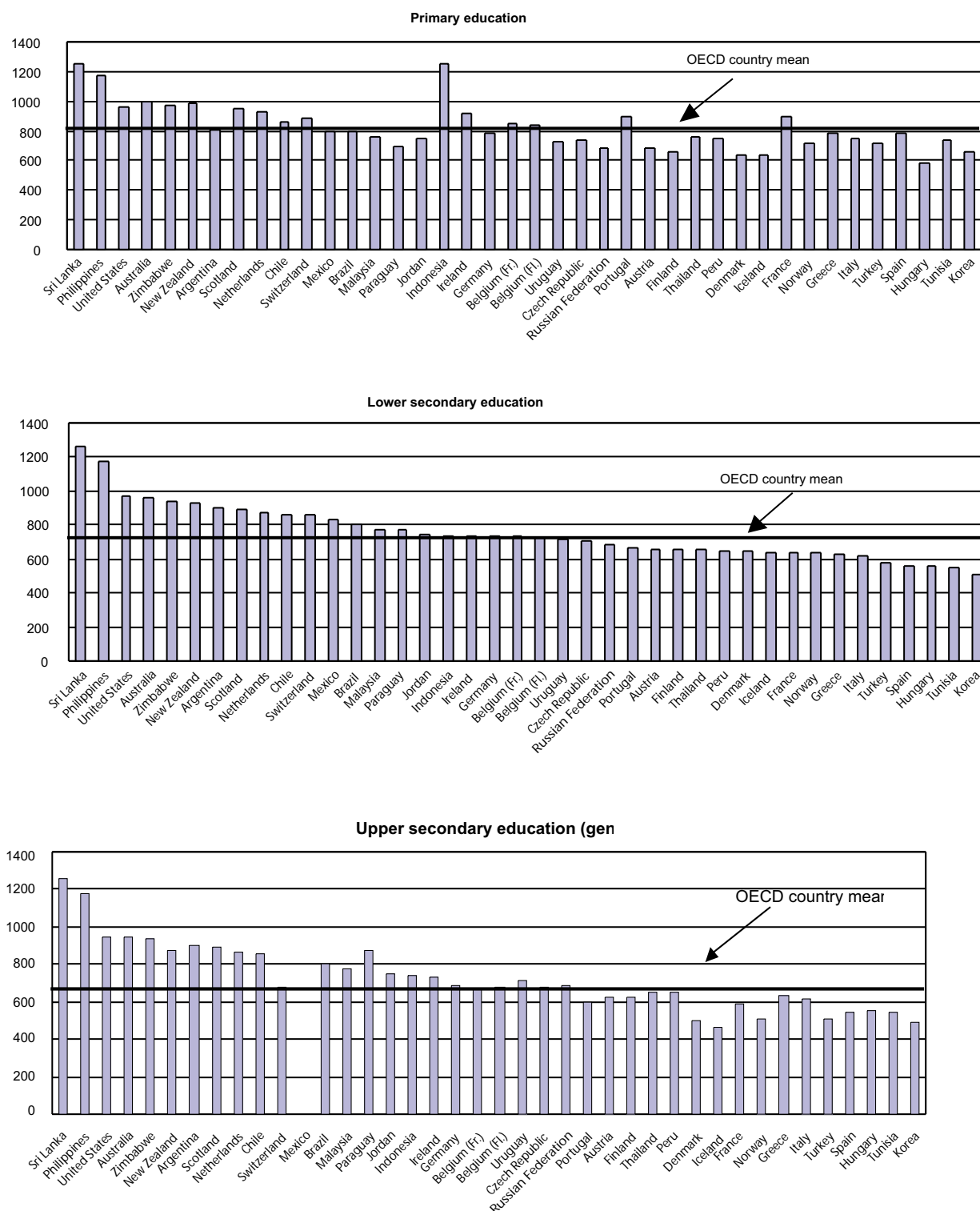
**3. Teachers' working hours are set at the local or school level. It is possible to calculate an average across these decision-making units**

	Pre-primary	Primary	Lower secondary	Upper secondary General	Upper secondary Vocational
New Zealand	22.5	25.0	25.0	23.0	a
United States	a	33.2	33.2	33.25	33.2

Notes m = data not available. a = data not applicable because the category does not apply.

Source: OECD, 2001.

Figures 28-30. Statutory number of teaching hours per year in public institutions by level of education, 1999



Notes: Countries are ranked in descending order of the number of teaching hours in lower secondary education. The year of reference is 1998 for all developing countries participating in the WEI programme, except Jordan (for which the year of reference is 2000).  
Source: OECD 2001 and OECD/UNESCO 2001.

**In some countries teaching time is double that of other countries**

At all levels of education there are wide variations between countries in the number of teaching hours per year (Figures 28-30). Teachers in Australia, the Philippines, Sri Lanka and United States spend almost twice as much time teaching (950 hours or more) as do teachers in Hungary at all levels of education and those in the Republic of Korea, Spain, Tunisia and Turkey at the secondary level, where the number of teaching hours per year is comparatively low (around 580 hours or less).

**While in OECD countries teaching time is generally highest in primary education and decreases in secondary education, in WEI countries teaching hours tend to remain the same at all levels of education**

In almost all OECD countries (except Mexico and the United States), teaching hours are higher in primary education than in secondary education. In the OECD countries, the average number of teaching hours in primary education is 801, in contrast to 716 hours in lower secondary education, 662 in general upper secondary education and 692 in vocational upper secondary education. In the developing countries participating in the WEI programme, teaching hours are, on average, slightly higher and, unlike the situation in the OECD countries, they remain the same between primary and upper secondary education in two-thirds of the WEI countries and even increase in Argentina, Paraguay and, to a lesser extent, Malaysia. One explanation for this pattern is that, given the high costs of training teachers for higher levels of education, developing countries need to ensure that they maximize the returns to this investment.

**Trend data suggest that teaching time was relatively stable during the 1990s**

OECD data show that the annual teaching load of secondary teachers did not change substantially between 1990 and 1996, confirming ILO trend data on a larger selection of countries (ILO 1996a). Within the OECD, the largest changes were reported at the lower secondary level, in Belgium (French-speaking community) where annual teaching time increased by 17 per cent, and Portugal, where it decreased by 12 per cent (see table 19 in Annex).

## 4.2. Class size

Class size is a measure of the average number of students in a teacher's classroom during a school period and represents an important indicator of the working conditions of teachers, as well as the learning conditions of students.

Smaller classes are valued because they may allow students to receive more individual attention from their teachers. Significant reductions in class size have sometimes been shown to be related to gains in achievement but there is no conclusive evidence that reducing class sizes is always the most effective policy option

for improving students' achievement (OECD 2000a). Lately it has been pointed out that smaller classes do make a difference in pre-primary and initial primary education and have had positive results for low-income and minority children in some countries. In general, the effect of class size should not be considered in isolation but in relation to changes in teaching methods and classroom organization; recent research in the United States has noted better teacher/student interaction, reduced disciplinary problems, and more group and overall instruction time in smaller classes (Bracey, 1999, cited in ILO 2000a).

Shifting the focus from cognitive outcomes to social and affective ones, research indicates that the main effect of smaller classes often relates to gains in teacher attitudes and instructional behaviours, and there is evidence that both teachers' and learners' stress is less in small classes (UNESCO, 1998). At the same time, smaller classes are more expensive. There are potential trade-offs between smaller classes on the one hand and the instruction time that can be devoted to each student, the teaching load for teachers, and costs on the other.

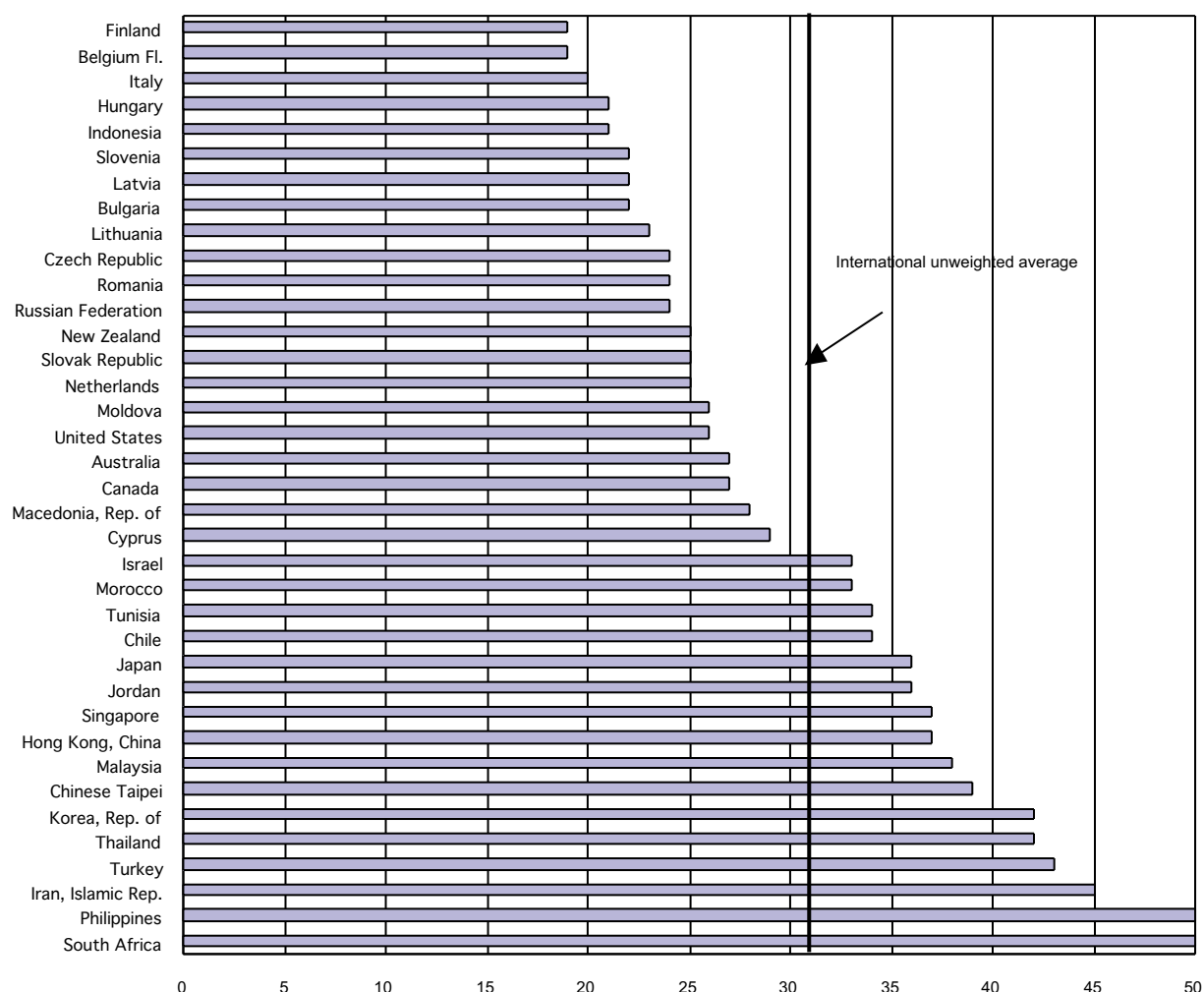
Given differences in the organization of instruction, it is very difficult to obtain direct estimates of class sizes. Often pupil/teacher ratios, which can be more readily obtained from existing data and for a wider range of countries, are used as a proxy for class-size, although the relationship between the two measures is complicated by teacher workload, instruction time for students and other institutional and instructional factors. Pupil/teacher ratios are generally much lower than average class sizes, as in many countries a considerable proportion of the teaching staff is not actually allocated to teaching or is employed on a part-time basis. Pupil/teacher ratios may also be higher than class sizes, as for example in systems with multiple shifts of students taught by the same teacher. Therefore, while the pupil/teacher ratio is an important indicator of the resources that countries devote to education and, at times, a proxy for measuring educational quality, it is less suitable for measuring teachers' working conditions.

In the case of mathematics instruction, the IEA Third International Mathematics and Science Study (TIMSS) provides a direct estimate of class sizes for fourth-grade and eighth-grade students in almost 40 countries. The following chart (Figure 31) shows the average mathematics class size of eighth-grade students, based on mathematics teachers' response data.

**In most participating countries, the average size of eighth-grade mathematics classes is smaller than 30 students.**

In 22 out of 38 countries that participated in TIMSS 1999, eighth-grade mathematics classes are less than 30 students. The smallest classes, with less than 20 students, are in Finland and Belgium (Flemish-speaking), while the largest ones are in the

Figure 31. Average mathematics class size of eighth-grade students, 1999



Source: International Association for the Evaluation of Educational Achievement (IEA); Third International Mathematics and Science Study (TIMSS), 1999 (Mullis et al., 2000).

Philippines and South Africa, where students are, on average, in classes 2.5 times larger than in the former cases. Other countries with more than 40 students per class are the Islamic Republic of Iran, Turkey, the Republic of Korea and Thailand.

An analysis of class sizes in middle- and low-income countries from data collected by the International Bureau of Education (IBE) shows that class sizes remain large in most developing countries (Figure 32).

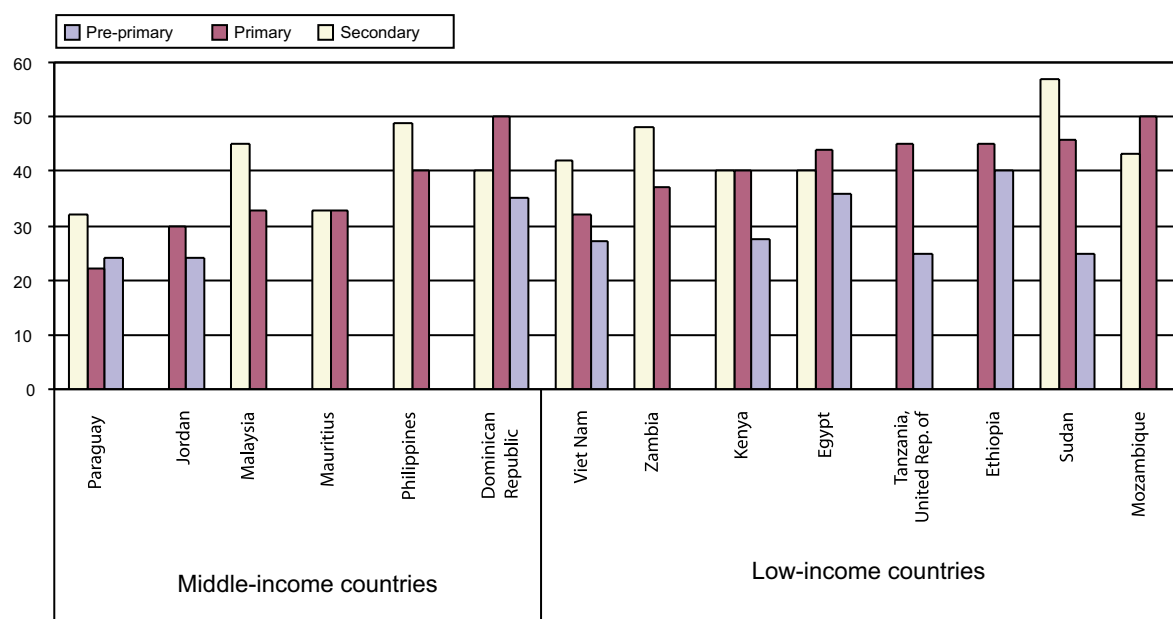
In all countries, the smallest classes are in pre-primary education, which may reflect the largely private nature of early childhood education in most developing countries as well the limitations posed by the child-caring function at this level. In primary and secondary education average class sizes remain large, above 40 or 50 students per class, in virtually all low-income countries and some middle-income ones.

**In some of the least developed countries, because of high rates of repetition and dropout, the size of the first grade in primary school exceeds twice that of the last grade**

In developing countries, class sizes in different grades are affected by the internal inefficiency of education systems, due to high rates of repetition and dropout and low survival rates. In Southern Asia, Latin America and the Caribbean and Africa South of the Sahara, less than three out of four pupils reach grade 5. In the least developed countries taken together the proportion is even lower, with only around half of the pupils remaining in school after grade 4. Indeed, many students drop out between the first and second grade. This situation results in overcrowded classes at the first grades of primary school that become progressively smaller at higher grades.

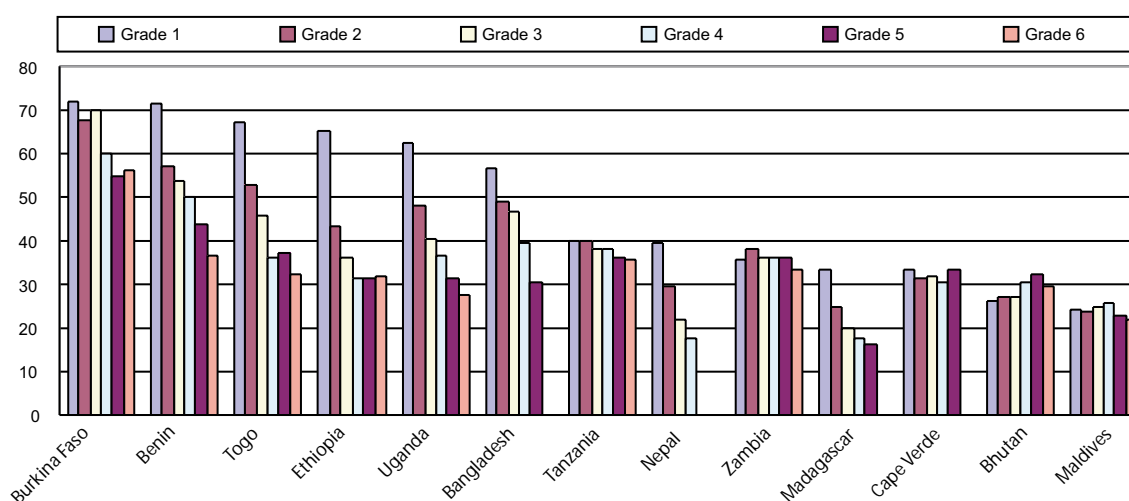
The UNESCO and UNICEF study on the conditions of primary schools in the least developed countries gives an idea of the magnitude of the decrease of class sizes in subsequent grades of primary school. Class sizes averaged at the primary education level hide these variations and the sometimes extremely difficult working conditions of teachers in the first grades (Figure 33).

Figure 32. Average class size by level of education in selected countries, 1998 (or latest year available)



Notes: Countries are ranked, within each income group, by ascending order of class size in primary school. The average is presented for countries reporting minimum and maximum figures.  
Source: IBE, 1999 (in ILO, 2000a).

Figure 33. Number of pupils per classroom by grade, selected least developed countries, 1995



Source: Schleicher et al., 1995.

In Uganda, Togo, Madagascar, Nepal and Ethiopia, which are among the countries with the highest number of students per class in grade 1, class sizes in grade 5 or 6 are half that in grade 1.

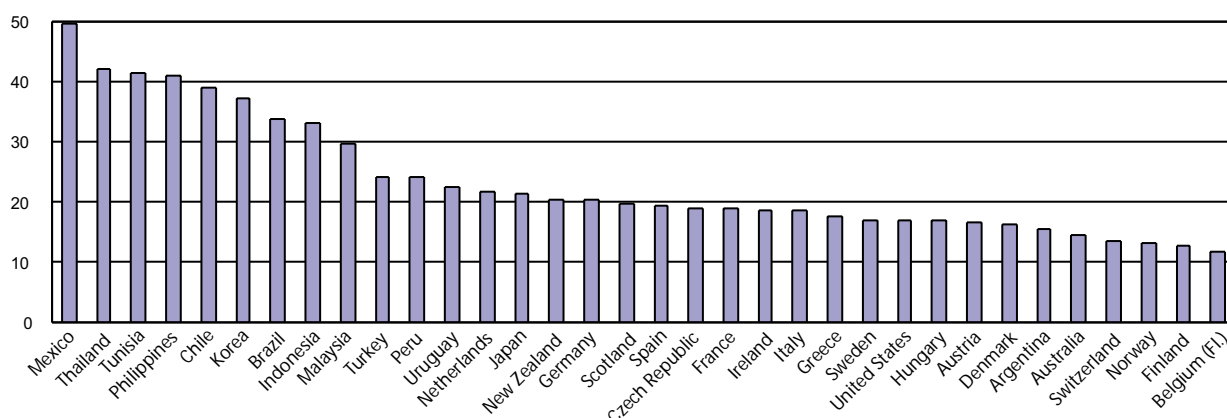
Indirect estimates of class sizes can also be used. One approach is to estimate class size as the average per country of the total number of students per school divided by total number of classes per school. Another approach (OECD, 1997) is to estimate class size as the

student/teaching staff ratio multiplied by the intended student instruction time and divided by the statutory average number of teaching hours.<sup>13</sup>

This measure is equivalent to weighting each class by the number of hours for which it meets during the year and it can be used as a proxy for class size if the assumption is made that all classroom teachers are fully occupied with teaching duties.

<sup>13</sup> The calculation formula is  $I \cdot S / (T \cdot t)$ , where  $I$  is the intended annual instruction time per student,  $S/T$  is the student/teaching-staff ratio in full-time equivalents and  $t$  is the annual teaching time for teachers. Principally,  $I \cdot S$  represents the total intended hours of instruction for students and  $T \cdot t$  represents the total number of teaching hours for all teachers in full-time equivalents. Intended instruction time refers to the number of hours per year for which pupils receive instruction.

Figure 34. Estimated class sizes in lower secondary education, OECD countries 1999, WEI countries 1998



Source: Calculated from OECD, 2001.

### Estimated class sizes in lower secondary school range from 50 to 12 students per class

Based on these estimates, a class in Mexico, with 50 students, comprises the number of students of four classes in Belgium (Flemish-speaking). All the countries participating in the OECD/UNESCO World Education Indicators programme for which data are available are at the high end of the scale, confirming the difficulty of lowering class sizes in developing countries, although in some countries, such as Peru and Uruguay, the estimated average number of students per class size is below 25. At the other end of the scale there are countries such as Australia, Belgium (Flemish-speaking), Finland, Norway and Switzerland, where there are not more than 15 students per class on average, based on this estimate (Figure 34).

## 4.3. Teachers' salaries

### Teachers' salaries can be assumed to relate closely to the quality of the teaching force. They are also the largest single factor in education expenditure

The level of teachers' salaries can affect both the decisions of qualified individuals to enter the teaching profession and the retention of current teachers. The relative level of teachers' salaries can thus have an important impact on the composition and quality of the teaching force, affect the ability of education systems to recruit better than average individuals and retain the most skilled teachers. At the same time, the pressure to improve the quality of education is often under tight fiscal constraints and teachers' salaries and allowances are the single largest factor in the cost of providing education, accounting for two-thirds or more of public expenditure on education in most countries (UNESCO, 1998).

OECD data permit comparisons with the annual statutory salaries<sup>14</sup> at the beginning of the career, after 15

years of experience and at the top of the scale of teachers with the minimum level of qualifications required to be certified as a teacher of public primary and secondary education. Statutory salaries, which refer to scheduled salaries according to official pay scales, should be distinguished from the actual wage bills incurred by governments and the average salaries of teachers because they are not affected by the age composition of the teaching force and are more comparable across countries.

### Primary teacher statutory mid-career salaries range from below US\$10,000 in Brazil, the Czech Republic, Hungary, Indonesia and Peru, to over US\$40,000 in Switzerland

There are significant differences between countries in the salaries they pay their teachers. In the OECD, annual statutory salaries of public primary schoolteachers with 15 years' experience and the minimum training required range from below US\$10,000 in the Czech Republic and Hungary to over US\$40,000 in Switzerland, with an average of US\$27,525 (data are adjusted for differences in price levels on the basis of purchasing power parities). A primary teacher in Switzerland, the country with the highest statutory salary with 15 years' experience, is paid more than five times as much as a primary teacher in Hungary where the statutory starting salary is lowest, and more than four times as much as a primary teacher in the Czech Republic, even after adjusting for purchasing power parities. Other countries where the statutory salary of teachers with 15 years of experience is more than US\$2,000 lower than the OECD country average are Greece, Finland, Iceland, Italy, Mexico, Sweden and Turkey as well as all WEI developing countries for which comparable data are available (Figure 35). This difference has of course a large impact on the variation in education costs per student.

<sup>14</sup> Reported salaries are defined as the sum of wages minus the employer's contribution to social security and pension. Salaries are before deductions for income taxes. Bonuses that constitute a regular part of the salary (such as a 13th month, holidays or regional bonuses) are included in the figures. The starting salaries reported refer to the average scheduled gross salary per year for a full-time teacher with the minimum training necessary to be fully qualified at the beginning of his or her teaching career. Salaries after 15 years' experience refer to the scheduled annual salary of a full-time classroom teacher with the minimum training necessary to be fully qualified and with 15 years' experience. The maximum salaries reported refer to the scheduled maximum annual salary (top of the salary scale) of a full-time classroom teacher with the minimum training to be fully qualified for his or her job.



**Some countries provide experienced teachers with considerable monetary incentives**

In Thailand, an experienced teacher who has attained the maximum salary earns almost five times as much as a teacher at the beginning of the career. Other countries with large increases in salaries during service include Brazil, France, Indonesia, Jordan, the Republic of Korea and Portugal. It should, however, be noted that the number of years required to reach the top of the salary scale from the starting salary varies considerably, ranging from eight years in Australia, Denmark and New Zealand to 35 years or more in Hungary, Italy, Jordan, the Republic of Korea, Spain and Thailand.

In some countries teachers may receive additional bonuses on top of their gross salaries. These range from 3 to 48 per cent, exceeding 15 per cent in Chile, the Czech Republic, Finland, Indonesia, New Zealand, the Philippines, Portugal, Spain, the United States and Uruguay (OECD, 2001).

**In some countries, upper secondary schoolteachers are paid up to two-thirds more than primary school ones**

The payment of a premium for teachers in the higher levels of education is another policy-related aspect of teachers' salaries. Teachers' salaries are generally rated to formal academic qualifications, as in most civil service systems, and in most of the countries secondary teachers have higher qualifications than their primary colleagues. In 19 out of 38 countries, the statutory salaries of teachers with 15 years' experience and minimum qualifications do not differ by more than 10 per cent between primary and upper secondary (ge-

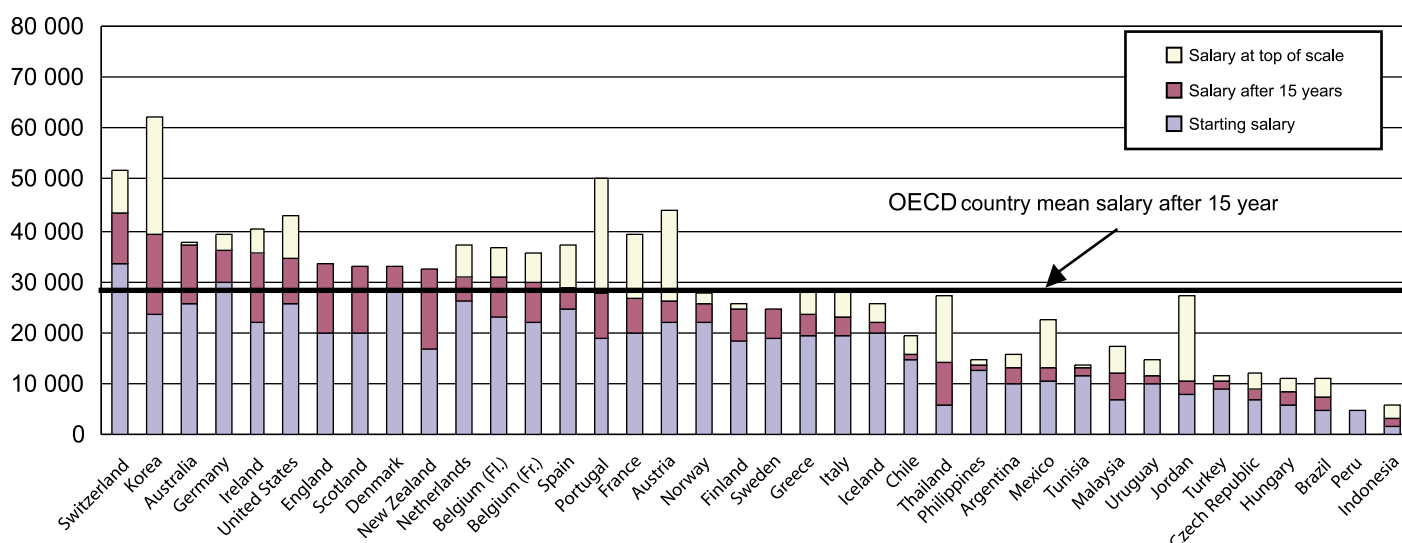
neral) levels. By contrast, in Belgium, the Netherlands and Switzerland statutory salaries of experienced upper secondary teachers are more than 35 per cent higher than those of their counterparts in primary schools, and in Argentina, Brazil and Malaysia the difference is between 67 per cent and 123 per cent (Figures 36-37).

**Salary trends during the 1990s show different patterns in high- and middle-income countries on one side and low-income countries on the other**

An analysis of the change (inflation-adjusted) in the salaries of teachers during the 1990s showed that in the majority of developed countries teachers' salaries remained stable or increased (Eurydice, 1995a; ILO, 1996a; 2000a; OECD, 1998a). According to OECD data, the annual statutory salary for secondary teachers after 15 years of experience increased by about 10 per cent in the United Kingdom, 14 per cent in Ireland and by 40 per cent or more in Turkey depending on the educational programme taught. The salaries for secondary teachers declined substantially only in Italy (11 per cent), Spain (only at the upper general level, 6 per cent) and Sweden (5 per cent) (table 25 in Annex). ILO analyses of salary trends confirm these results (ILO, 1996a; 2000a).

In high- and many middle-income countries, teachers' salaries increased or remained stable. The highest increases were recorded in Asian countries (before the Asian financial crisis at the end of the 1990s), including the Republic of Korea, Singapore, Thailand, and in small, relatively prosperous countries such as

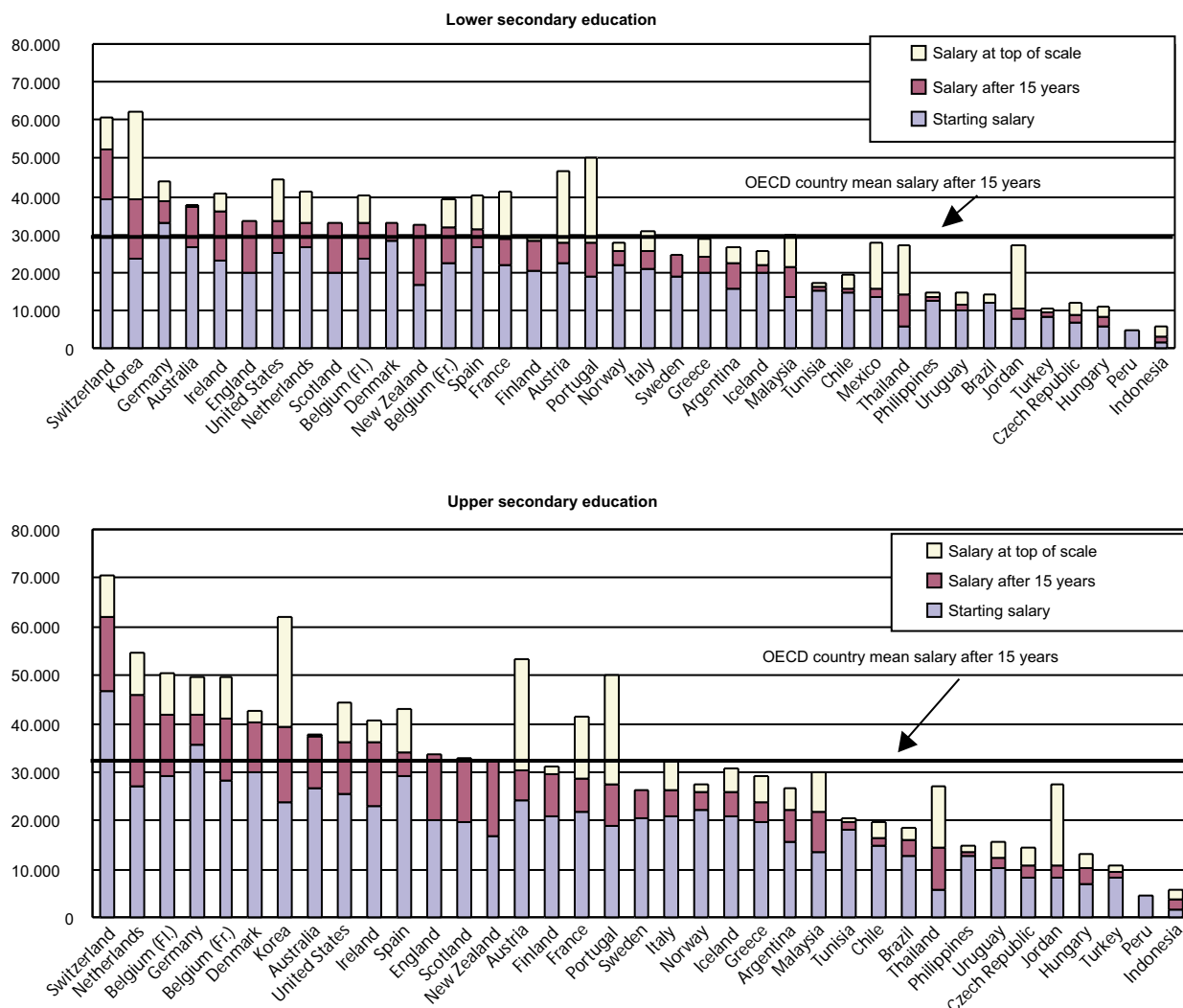
**Figure 35. Annual starting, mid-career and maximum statutory teachers' salaries in primary education, in equivalent US dollars converted using purchasing power parities (PPPs), 1999**



Notes: Countries are ranked in descending order of salaries after 15 years' experience. Maximum salaries are reached before 15 years' experience in Australia, Denmark, England, New Zealand and Scotland, so that the mid-career part of the bar in the above chart shows in fact maximum salaries.

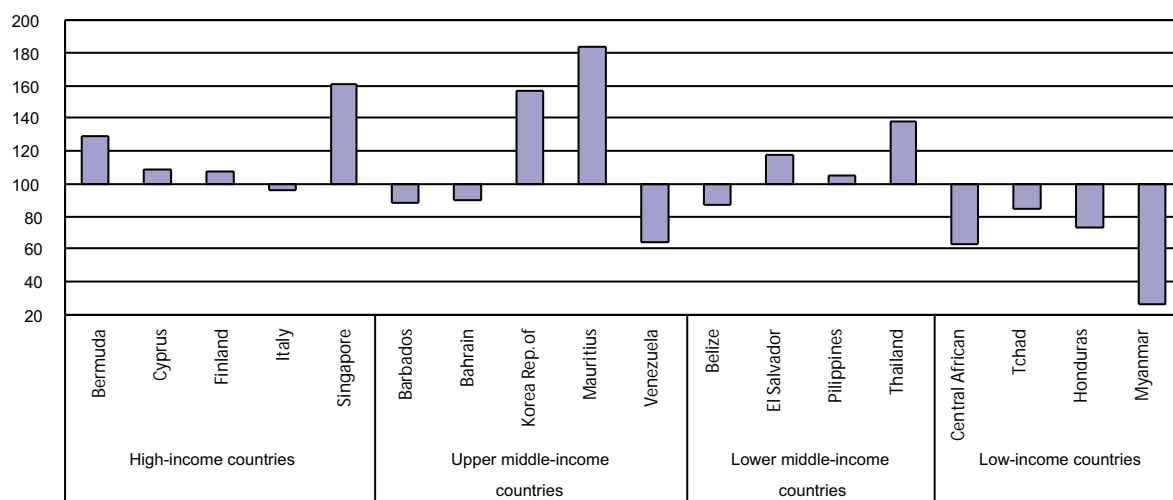
Source: OECD, 2001.

Figures 36-37. Annual starting, mid-career and maximum statutory teachers' salaries in lower and upper secondary education, in equivalent US dollars converted using PPPs, 1998



Note: Countries are ranked in descending order of salaries after 15 years' experience.  
 Source: OECD, 2001.

Figure 38. Real salary index for secondary teachers (languages and mathematics) in selected countries, 1990-98 (or latest year available) (1990=100)



Note: The figure for language teachers was used when countries reported different figures for language and mathematics teachers.  
 The figure for male teachers was used when countries reported different figures for male and female teachers. The minimum figure was used when countries reported minimum and maximum figures. See table 26 in Annex for years of reference.  
 Source: ILO, 2000a.



Bermuda and Mauritius. In low-income countries, conversely, salaries continued to deteriorate, due to continued fiscal difficulties and structural adjustment policies (Figure 38).

#### 4.4. Teachers' salaries in relation to GDP per capita

Statutory salaries for teachers relative to per capita GDP provide some indication of the economic status of the teaching profession and the extent to which a country invests in teaching resources, relative to its financial capacity.

**Despite increases in real terms, teachers' salaries have, in most developed countries, not kept pace with increases in per capita national income**

Trend data show that, despite increases in teachers' salaries in real terms, the position of teachers in relation to average per capita GDP has weakened in the majority of OECD countries (OECD, 2001). Between 1994 and 1999, mid-career salaries of primary and lower secondary teachers decreased in relation to GDP per capita in all OECD countries reporting data, except Greece and New Zealand. At the primary level, the OECD average for mid-career salaries relative to GDP per capita was 1.32 in 1999, compared to 1.42 in 1994, and at the lower secondary level this value decreased from 1.50 in 1994 to 1.36 in 1999. In Ireland, the mid-career salary of a lower secondary teacher relative to GDP per capita was 2.23 in 1994, but this value decreased to 1.39 in 1999 (see table 25 in Annex).

According to a study on changes in salaries in the EU between 1965 and 1993 (Eurydice, 1995a), the ratio of teachers' salaries to GDP per capita declined more markedly for maximum salaries than for minimum ones, reflecting policies to improve starting salaries to the detriment of those at the top of the scale. While this made entry to the profession more attractive and lightened the pension burden, it also decreased the monetary incentives for skilled individuals to stay in the profession. Based on these same data, differences between primary and secondary schoolteachers' salaries tended to become less marked.

**In general, minimum salaries are below GDP per capita in EU and OECD countries, while mid-career and maximum salaries are above GDP per capita**

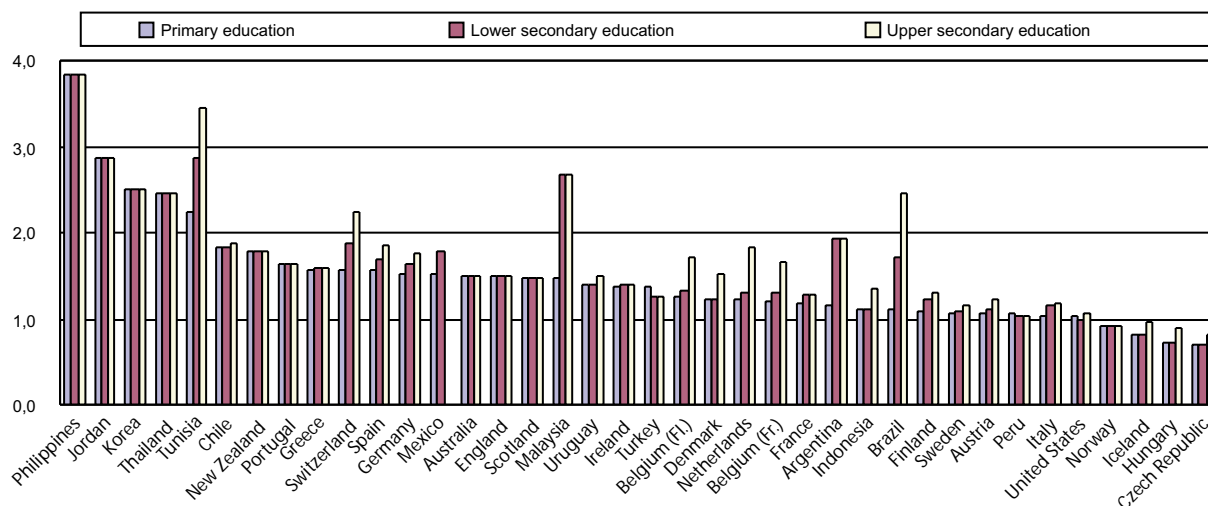
Despite the gradual narrowing of the gap between salaries at the beginning and at the end of the career observed in many of the EU countries between 1965 and 1993, an analysis of the current position of salaries relative to GDP per capita in European and OECD countries shows that length of service continues to represent a source of significant differences between teachers' salaries. While only a minority of countries at all levels of education pay initial teachers' salaries at or above GDP per capita, the mid-career and maximum salaries are above GDP per capita in the large majority of countries (Eurydice, 2000, OECD, 2001).

**When teachers' salaries are compared to national per capita income, many middle- and low-income countries reach positions that are comparable to, or higher than, those in OECD countries.**

The ratio of teachers' salaries to GDP per capita reflects patterns of relative productivity that vary greatly between sectors in accordance with a country's level of development. This ratio is generally higher in developing countries than in more developed countries, because of the greater productivity in the service sector than in the rest of the economy.

Unlike what happens in the majority of OECD countries, starting salaries for teachers with the minimum requisite qualification are above GDP per capita in seven out of 11 WEI countries at the primary level, and at the secondary level in all countries except Indonesia, Uruguay and Peru (upper secondary only) (OECD/UNESCO, 2001). Mid-career salaries of teachers with the minimum level of training exceed twice the national per capita income in the Philippines, Jordan, the Republic of Korea, Thailand, and Tunisia at all levels of education, in Malaysia for lower and upper secondary teachers, and in Switzerland and Brazil for upper secondary teachers only (Figure 39). In contrast, they are

**Figure 39. Statutory salaries after 15 years' experience relative to GDP per capita by level of education, 1999**



Note: The year of reference is 1998 for all developing countries participating in the WEI programme, except Jordan, for which the year of reference is 2000.  
Source: OECD, 2001.

lower than GDP per capita in the Czech Republic, Hungary, Iceland and Norway. While the Czech Republic and Hungary have both relatively low GDP per capita and low teachers' salaries, other countries with low GDP per capita, including Jordan, the Republic of Korea, Thailand, the Philippines, and Spain, have comparatively high teachers' salaries. At the other end of the scale, Norway and the United States, two countries with relatively high GDP per capita, spend a below-average proportion of their wealth on teachers' salaries, while Switzerland spends an above-average proportion of its relatively high GDP per capita on teachers' salaries.

#### 4.5. Teachers' salaries and earnings of other workers

An even more relevant benchmark for the level of teachers' salaries than national per capita income is the earning of other workers, particularly those with equivalent qualifications.

Statutory salaries of primary and upper secondary teachers have been compared with the 10th, 50th and 90th percentile of the distribution of gross annual earnings of full-time wage and salary workers in 18 OECD countries. This comparison shows that although primary teachers in most of the reporting countries fare relatively well when compared with other full-time wage and salary workers, teachers in the Czech

Republic, Finland, Hungary and Sweden receive comparatively low compensation. The general pattern is similar in secondary schools (OECD, 2000a).

#### **In most OECD countries teachers' salaries are lower than those of equally qualified workers**

In most of the countries for which data are available, primary teachers' statutory salaries after 15 years' experience are lower than the average earnings of other highly qualified workers, except in New Zealand and, for secondary schoolteachers, France, Germany, Sweden and Switzerland. Teachers' salaries in the Czech Republic and Hungary are at most 40 per cent of the average salaries of university graduates (OECD, 2000a). In interpreting these comparisons, other aspects of working conditions of teachers have to be taken into account, such as teaching loads and total working time compared with those of other professions.

The unfavourable position of teachers in relation to other qualified professionals in both OECD and non-OECD countries has also been noted by the ILO, along with recent efforts made in some countries (for example Lithuania and Saudi Arabia) to establish higher salary scales in relation to other public sector jobs (IBE, 1999, cited in ILO, 2000a).



## 5. Putting the puzzle together

**The working conditions of teachers are determined by the combination of many factors, including salaries, class sizes and workload**

Teachers' working conditions are determined not by any of the indicators presented in the previous sections in isolation, but by their combination. When governments decide on their education budgets, they need to make trade-offs between factors such as the level of teachers' salaries, the size of classes, the number of teaching hours required of teachers and the intended instruction time planned for students. How much does it cost an education system, for example, to have a teaching force that teaches relatively fewer hours per year than in other countries, all other characteristics of the education system remaining unchanged? Or how much do higher statutory salary levels, perhaps the most important malleable reward of the teaching profession, increase costs per student? How much do relatively higher pupil/teacher ratios reduce costs per student?

This section shows how these structural characteristics of education systems translate into higher or lower teaching costs per student, based on a methodology developed by the OECD in 1997 and revised in 2001<sup>15</sup> (OECD/UNESCO, 2001).

The following analysis is restricted to the lower secondary level of education and to 22 of the 29 OECD countries plus Argentina, Brazil, Chile, Indonesia, Malaysia, Peru, the Philippines, Thailand, Tunisia and Uruguay, countries for which comparable data on all of these factors could be compiled. In the analysis that follows, the average of these countries has been used as a benchmark to allow comparing national policy choices.

The difference between the teacher salary costs per student in each of the countries and the average over all countries has been decomposed into four main components that measure how much (or less) than the average is spent per students on significant determinants of educational costs: (a) the level of the statutory salary for teachers after 15 years of experience; (b) the intended annual hours of instruction for students; (c) the statutory number of teaching hours for which full-time teachers are expected to teach; and (d) class sizes (estimated as the student/teaching staff ratio multiplied by the intended student instruction time and divided by the statutory average number of teaching hours). A fifth effect ("two or more factors jointly considered") shows the residual value due to the interaction of all four factors (Figure 40). What the following analysis shows is that countries make very different policy choices between the different structural factors.

**Countries with similar statutory costs per student make different policy choices**

Peru and the Philippines are countries with similar, comparatively low statutory costs per student (US\$246 and 267 per year respectively). In Peru teachers are paid the second lowest salaries among the countries considered (US\$4,235 per year), while in the Philippines, although teachers' salaries are still at the lower end of the scale, they are paid more than twice as much (US\$10,640). However, in the Philippines teachers work longer than average hours (1,176 hours per year) and teach larger classes (50 students), while in Peru the teaching load is below the average (648 hours) and class sizes are at the average level, which reduces the salary disadvantage of teachers but adds to the salary outlays of governments per student.

New Zealand and the Republic of Korea are, with around US\$1,700 of annual salary outlays per student, just above the average of countries. But both countries make very different decisions about other aspects of teacher working conditions: while in New Zealand annual teaching hours are, with 930 hours, comparatively high (which reduces the costs per student by US\$275) they are, in the Republic of Korea, comparatively low (507 hours), thus increasing salary outlays per student by more than US\$600. The converse is true when looking at class sizes. In the Republic of Korea, class sizes are well above the country average, thus helping to reduce salary outlays per student by almost US\$500, while in New Zealand class sizes are below the country average.

Switzerland, Austria and Denmark show the highest teacher salary costs per student, with US\$4,315, US\$2,857, and US\$2,814 respectively. In Switzerland, high salary levels are counterbalanced by a comparatively high teaching load (860 hours per year), while in Austria and Denmark, the reverse is true (658 and 644 hours per year). In all three countries, comparatively small classes reduce the workload of teachers but add between US\$604 and US\$1,086 to salary outlays per student.

**In some countries, high teacher statutory salaries are compensated by a high teaching time or larger than average class sizes, while in other countries low salaries are combined with large class sizes and large teaching loads**

In Germany, the Republic of Korea, Japan and Switzerland annual statutory salaries are, with between US\$38,000 and US\$52,000, the highest among the countries compared. In Switzerland, this effect on salary costs per student is only in part compensated by a larger than average teaching load and in Japan by a lower than average instruction time for students. In the

<sup>15</sup> All costs are expressed in equivalent US dollars converted using purchasing power parities (PPPs).

Republic of Korea, the effect of larger than average class sizes reduces the salary level effect by more than half. That is, while teachers in the Republic of Korea are well compensated for their work, they have to cope with very large class sizes. Conversely in Germany, Japan, and Switzerland teachers are not only well remunerated but they also teach classes with fewer students than average, and in the latter country this effect increases the salary outlays per student by more than US\$1,000.

In Indonesia, Peru, Uruguay, Hungary and the Czech Republic teacher salary levels are the lowest, between less than US\$2,000 and US\$9,000. In Indonesia, class sizes are larger than average, which reduces even more the salary cost per student but adds to the workload of teachers.

**In some countries, a higher than average time of instruction for students is the only factor increasing the salary outlays per student above the average of countries**

In Uruguay, the Philippines and Indonesia instruction time for students is highest, with an average of between 1,231 and 1,467 hours of instruction per year in lower secondary education. The effect of this factor, which in-

creases the salary outlays per student by between US\$330 and US\$650 above the average of countries, is largely compensated by lower than average salaries and larger than average class sizes in both Indonesia and the Philippines. Moreover, in the latter country, teaching hours are higher than average, which further contributes to reduce salary costs per student but aggravates the working conditions of teachers.

**In some countries, a lower than average teaching load is compensated by larger class sizes, while in other countries smaller than average class sizes add to a low teaching load increasing salary costs per student**

In Spain, Sweden, the Republic of Korea, Hungary and Tunisia, annual teaching hours at the lower secondary level are relatively low (less than 600 hours); as a result more teachers are required to cover the total demand for teaching. This adds significantly to salary expenditures per student (between US\$380 in Sweden and US\$615 in the Republic of Korea). In Spain, Sweden and Hungary smaller than average class sizes add to this effect whereas in the Republic of Korea and Tunisia larger class sizes compensate for the lower teaching workload.

### Box 1. How to read figure 40

Expenditure per student on teachers' salaries can be estimated from teachers' salaries, student hours of instruction, teachers' hours of teaching and class size, calculated on the basis of student/teacher ratios. Figure 40 shows how the different factors influence expenditure in each country. The vertical line shows the country average statutory teacher salary cost per student (US\$1,342). The bars presented for each country indicate the effect on salary costs per student of each individual factor in turn, by considering the national value for that factor and assuming that all other factors are at the country average level.

The factor "level of statutory salary (15 years of experience)" shows the effect on salary costs per student if students' hours of instruction, teachers' teaching time and class sizes are at the level of the average of countries, but teachers' salaries are at the national level. Since higher teachers' salaries lead to an increase in costs per student, a bar to the right of the vertical line indicates that salaries are above the country average. For example, in Australia, higher than average teachers' salaries add more than US\$700 to the international country average of US\$1,342 of statutory salary cost per student enrolled. Conversely a bar to the left of the vertical line shows that teachers' salaries are below the country average. In the Philippines, for example, below-average teachers' salaries reduce the international country average of US\$1,342 by US\$750.

The factor "students' hours of instruction" shows the effect on teacher salary costs per student if the other three values are at the country average, but the number of hours of instruction is at the national level.

Since more hours of instruction per student lead to an increase in cost per student, a bar to the right of the vertical line indicates that hours of instruction are above the average of countries. For example, while lower than average teachers' salaries reduce the costs per lower secondary student in the Philippines, higher than average hours of instruction increase the average cost per student by US\$650.

The factor "teachers' teaching hours" shows the effect on teacher salary costs per student if the other three factors are at the country average, but the number of teaching hours for which full-time teachers are expected to teach is at the national level. In this case, if teachers teach more hours, costs per student decrease. A bar to the left of the vertical line therefore indicates that teaching hours are above the average of the countries, as for example in the case of Australia, while a bar to the right indicates that teaching hours are below it, as for example in the case of Hungary.

The factor "class size" shows the effect on teachers' salary costs per student if the other three factors are at the country average, but class size is at the national level. Again, since costs increase if fewer students are in a class, a bar to the right of the vertical line quantifies the additional cost per student due to a below the average class size, as, for example in Switzerland, Finland and Norway.

The factor "two or more factors jointly considered" shows the residual value due to the interaction of all four factors.

The factor "country statutory cost per student", which in figure 40 is indicated by the numerical value next to the bars of each country, shows the teacher salary costs per student.

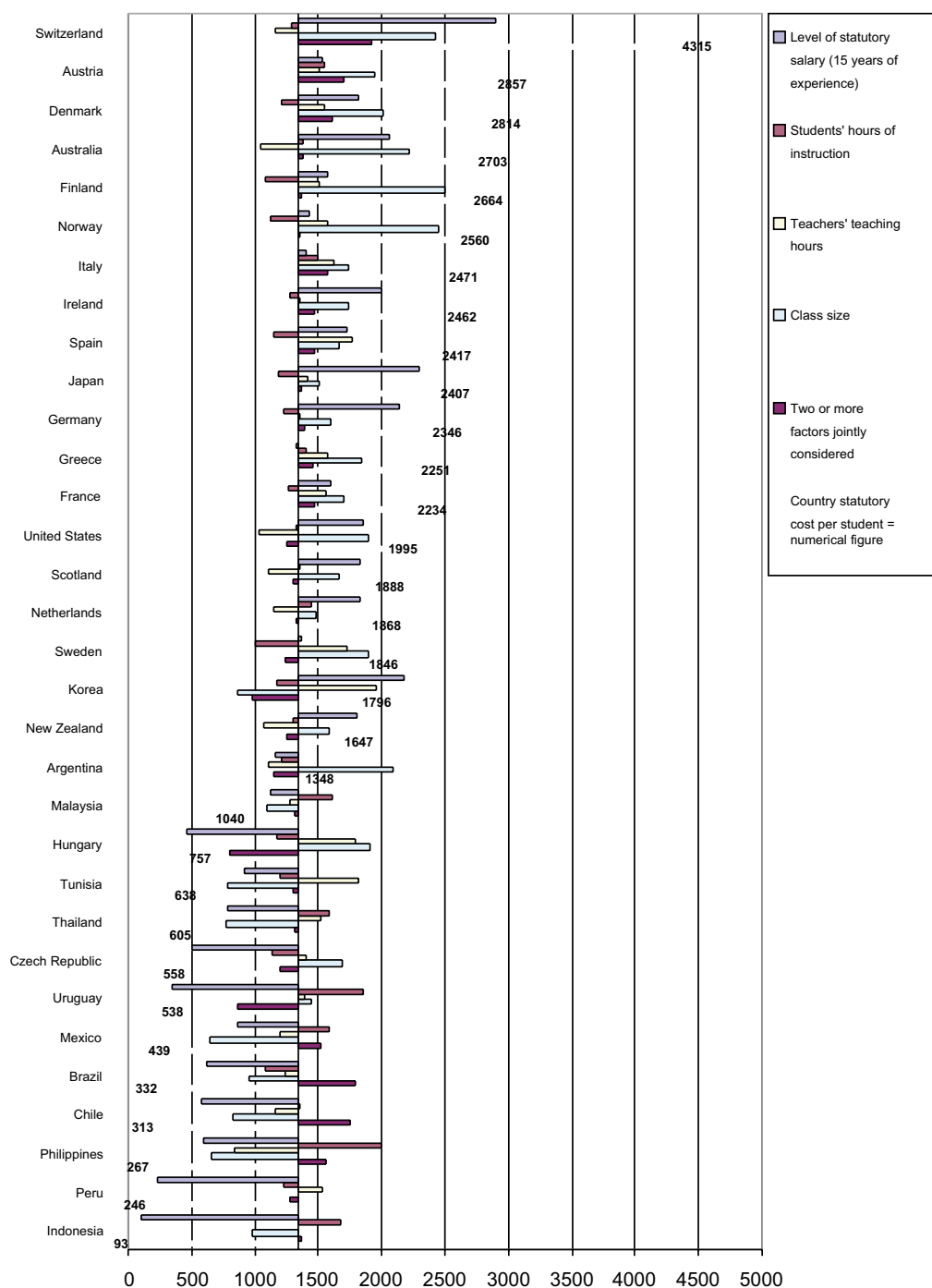


At the other end of the spectrum are Australia, the United States, New Zealand and the Philippines, where teachers are required to teach for more than 900 hours per year, which adds to the burden on teachers but frees up resources for other purposes. In Australia, the United States and New Zealand, the positive effect of the large teaching load on salary outlays per student is largely compensated by comparatively higher salary levels while in the Philippines teachers have both a high teaching load and comparatively low salary levels. In the Philippines, larger than average class sizes compound the high teaching load.

**In some countries, large class sizes reduce the teacher salary costs per student**

In the Republic of Korea, Tunisia, Thailand, Mexico, Chile and the Philippines class sizes are comparatively high, with between 37 and 50 students per class on average. In all of these countries, this reduces salary outlays per student, in the cases of Mexico and the Philippines by almost US\$700, and thus helps to provide resources for other purposes.

**Figure 40. Decomposition of the difference between teacher statutory salary cost per student in each country and the average teacher statutory salary cost per student over all countries, 1999**



Notes: Countries are ranked in ascending order of country statutory salary cost per student enrolled.

The year of reference is 1996 for all the countries participating in the WEI programme.

Source: OECD, 2001 and OECD/UNESCO, 2001.





## 6. Teacher indicators

Policy-makers are paying increasing attention to which educational, social and economic factors contribute to improved education and learning and enhanced returns to investment in education. The process of teaching is at the heart of education and the expertise, pedagogical know-how and organizational and technical competence of teachers are widely considered to be central to educational improvement.

This shift in the focus of policy attention, coupled with a generally increasing demand for sound and comparable quantitative evidence, has also helped to strengthen the statistical knowledge base on teachers and teaching. In cooperation with relevant national agencies, international organizations, including the European Commission, the IBE, the ILO, the OECD, and UNESCO, are working on the establishment of reliable and internationally comparable statistics on the qualifications, salaries and labour market position of teachers and on their working conditions.

As this report illustrates, some progress has been achieved over the last years, especially with respect to OECD countries, but many gaps remain. The following section of this paper lists some of the important data gaps and describes methodological difficulties that continue to limit the development of a comprehensive statistical profile of the status of the teaching profession and its service conditions. Some recommendations for future data development are also made.

### 6.1. Data gaps

Aspects of the status of the teaching profession and its service conditions for which methods and instruments for the compilation of internationally comparable information have been developed include:

- teacher demographics;
- part-time/full-time employment status;
- student/teaching-staff ratios;
- length of pre-service training;
- statutory teaching time;
- statutory teachers' salaries, in absolute and, to a more limited extent, relative terms.<sup>16</sup>

Although the geographical coverage of these data is still limited, as is apparent from this report, there is a steadily growing number of countries outside the EU and OECD which are now implementing standardized methods and data collection instruments on a regular basis. For example, through the World Education Indicators programme, 20 developing countries are currently working with the OECD on establishing com-

parative standards and methods. Moreover, the UNESCO Institute for Statistics launched an education survey (Survey 2000) in which new variables concerning the teaching force have been included, such as the number of teachers in full-time equivalents and the number of trained teachers, and new information on expenditures by type of teaching staff was collected. The UNESCO Institute for Statistics has held regional workshops in a wide range of countries with the aim to cover and analyse these issues more in depth. The ILO is examining improvements in salary and hours of work among different sectors, including education.

While progress is being made, there are important aspects of the situation of the teaching force where relevant and internationally comparable data are either non-existent, or where a lack of consistency in the underlying concepts, definitions and data collection instruments render the existing data inadequate for the purpose of international comparisons. For example:

- Direct measures of the qualifications of the existing teaching force – except educational attainment in some countries – are generally not available.
- Comparative data on in-service or continual teacher training, including descriptive data of in-service training programmes and the organization of the training courses, and measures of the time spent on in-service training programmes, are only at an early stage of development.
- While some comparable measures of statutory teaching time are available, it has proved far more difficult to measure and compare total teacher workload, including non-instructional and non-school-based activities.
- While comparable measures of student/teaching staff ratios can usually be calculated, differences in classroom organization (particularly at the higher levels of education) make it very difficult to compute and compare class sizes (which are much more closely related with the employment conditions of teachers than student/teaching staff ratios).
- For some countries, separating teaching staff from other educational personnel proves to be very difficult, in particular for countries in which teachers have significant non-teaching responsibilities.
- Measures of the competitiveness of the employment conditions of teachers are often still limited to comparing salaries and working time with other groups of workers.
- The quantification of instructional practices and classroom organization is proving to be very difficult.

<sup>16</sup> Statutory teachers' salaries have been analysed in relation to GDP per capita for both the OECD countries and developing countries. Statutory teachers' salaries have been also compared to those of other workers, including those with equivalent qualifications, for the OECD countries, where teachers are generally required to have a tertiary qualification. Further analysis of the appropriate reference occupation/qualification is needed for developing countries.

- The big investment in cross-national assessment of student learning achievement in recent years has not been matched by a corresponding investment in the assessment of teacher learning achievement. How much teachers in the different countries actually know, either in the field(s) they are supposed to teach, or generally, is one of the biggest gaps in our knowledge about teachers internationally.
- Information on the availability, use and effectiveness of information and communications technology in education, while improving rapidly, remains unsatisfactory.
- A framework for comparing trends towards the autonomy of educational institutions, including the participation of teachers in decision-making processes, does not yet exist.
- National institutional structures and the nature and organization of educational programmes vary greatly among countries and therefore make international comparisons difficult. The revised International Standard Classification of Education (ISCED-97) provides some help but considerable work remains to be done in implementation of these standards.

There are also areas where differences in the methods and data collections instruments that are applied by different international organizations make comparisons difficult. For example, part-time teachers are defined as teachers whose workload is lower than 90 per cent of the number of statutory working hours required of a full-time teacher by OECD, while EURYDICE applies a threshold of 75 per cent of a full-time workload and UNSECO defines part-time teachers as those whose statutory working hours are less than those required of a full-time teacher.

## 6.2. Towards filling the gaps

Filling some of the data gaps, e.g. those on teaching and learning processes, teacher learning achievement, or the integration of information technology into teaching and learning, requires extensive surveys and observation studies which are usually beyond the reach of standard international data collection programmes that can be administered on a regular basis.

However, as the OECD Education Indicators programme has shown, many of the data gaps mentioned above can be addressed with relatively simple and inexpensive annual data collections, which are based on a set of definitions, methods and data collection instruments that are annually reviewed and updated collaboratively by participating countries. The necessary data can often be derived from existing national sources that are then projected to international standards using statistical methods.

Many of the concepts and definitions presented in the following are derived from the OECD annual data collection on education statistics (OECD, 1999).

The following provides basic considerations for the development of internationally comparable statistics on teachers and their working conditions.

### Defining the teacher for statistical purposes

Collecting data on teachers and their working conditions is complicated, among other factors, by national differences in the work organization for education personnel. For example, in some countries “teachers” also assume significant non-teaching duties, at times including those of a school principal, whereas in other countries there is considerable functional differentiation, with various pedagogical, administrative and indirect support functions carried out by specialized personnel other than teachers. Other problems arise from the fact that countries differ in their practices in counting teachers without active teaching duties or persons who work occasionally or in a voluntary capacity in educational institutions.

A first prerequisite for obtaining internationally comparable statistics on teachers is therefore that countries adjust their data to reflect a standardized statistical concept of a teacher that can be distinguished consistently from other staff with special pedagogical, administrative, and professional functions, as well as from indirect support personnel.

For statistical purposes, in OECD indicators work, a teacher is defined as a person whose professional activity involves the transmission of knowledge, attitudes and skills that are stipulated to students enrolled in an educational programme (OECD, 2000a). This definition does not depend on the qualification held by the teacher nor on the delivery mechanism but, instead, is based on three concepts:

- Activity, thus excluding those without active teaching duties (however, teachers temporarily not at work, e.g. for reasons of illness or injury, maternity or parental leave, holiday or vacation, should be included in the statistics as these conditions do not contradict the above requirement of activity).
- Profession, thus excluding people who work occasionally or in a voluntary capacity in educational institutions.
- Educational programme, thus excluding people who provide services other than formal instruction to students (e.g. supervisors, activity organizers, etc.), whether the programme is established at the national or school level.

In this definition, principals, presidents, vice-principals, and other administrators without teaching responsibilities in educational institutions, as well as teachers without active teaching responsibilities for students in educational institutions, should not be classified as “teachers”, but as “other professional personnel”. As mentioned above, a common difficulty is that the job profile of a teacher often combines both teaching and non-teaching duties. Since the combinations differ between countries, often considerably, it



may be desirable to separate the teaching and non-teaching components statistically, i.e. in terms of hours spent on each of them (see section on headcount data and full-time equivalents).

In order to provide for a basic set of indicators on teachers, at least the following information should be collected: (1) education personnel by type of institution (public, government-dependent private and independent private), personnel category (teaching staff, administrative and professional support staff and other support personnel), mode of employment (full-time, part-time, full-time equivalent), and gender; and (2) teaching personnel by level of education, type of programme taught, type of institution, mode of employment, gender and age groups.

The basis for defining teachers and other educational personnel could be the International Standard Classification of Occupations (ISCO-88) developed by the ILO. ISCO-88 provides definitions of managers, teaching professionals at all educational levels, associate teaching professionals and a range of support staff based on defined tasks and responsibilities.

### Dealing with differences in national institutional structures

Another difficulty that needs to be overcome in international comparisons is to ensure that the institutions and levels of education that teachers are serving are comparable across countries. Institutional structures and how they relate to different levels of education differ widely among countries. In addition, teaching staff often work in more than one level or type of educational programme. Thus, the separate collection of staff statistics for “general and academic” education and “vocational and technical” education poses several conceptual and technical problems in countries that do not have a reporting system which classifies teachers by the level of education and the type of educational programme in accordance with ISCED-97 a priori (or where national programme categories differ from the ISCED-97 provisions). In these cases, for the purpose of reporting headcount data, teachers should be pro-rated according to the time they are assigned to the corresponding levels and type of educational programmes.

### Headcount data and full-time equivalents

While for some purposes the reporting of headcount data is adequate, for others the data on teachers need to be converted to full-time equivalents before meaningful comparisons can be made. For example, student/teacher (teaching staff) ratios are often meaningful, if both the students and the teachers are converted to full-time equivalents prior to the calculation of the indicator. Otherwise, differences in the incidence of part-time teaching or differences in the study load of students across countries can grossly distort the comparisons.

The classification of teachers (or other educational personnel) as “full-time” or “part-time” should be based on the concept of working time. The stipulation of full-time employment is usually based on the “statutory hours” or “normal or statutory working hours” (as opposed to actual or total working time or actual teaching time). Some countries operationalize the concept of statutory working time through statutory teaching time. Whether a teacher is classified as a full-time or part-time teacher will depend on the total number of statutory working hours (or teaching hours) over all levels, educational programmes, types of institutions, and functions. Part-time employment refers to individuals who have been employed for less than the amount of statutory working hours required for a full-time employee.

The full-time equivalence of part-time teachers (or other education personnel) is then determined by calculating the ratio of hours worked by part-time teachers over the statutory hours worked by a full-time teacher during the school year.

For the purpose of reporting headcount data, teachers should be pro-rated between those levels, educational programmes, types of institutions, and functions to which they are assigned. That is, teachers in different types of programmes should be divided proportionally to their number of statutory working hours. Where full-time equivalents are reported, data on teachers should be pro-rated according to their statutory working time at the different levels, educational programmes, types of institutions, and functions. Full-time teachers who receive additional contracts/remuneration to perform additional teaching tasks, should be counted only once, as one full-time teacher, for the purpose of collecting headcount data, but with a full-time equivalence factor greater than one.

This methodology would ensure that the employment variable (full-time/part-time) is reported more accurately, while the numbers reported by level, educational programme, type of institution, and function would be subject to some error (though not necessarily bias). The alternative (i.e., reporting full-time teachers as multiple part-time teachers in the different aspects) would destroy the employment variable and also bias the overall count of individuals employed in education.

### Measuring teacher qualifications

Adequate instruments for the collection of data on pre-service training have been developed by the OECD and are reported routinely in Education at a glance. These instruments report the requirements for pre-service training for new teachers based on ISCED-97. To reflect differences in the models of teacher training, a distinction between the concurrent training model (in which theoretical and practical training in education is provided at the same time as study of subject matter) and the consecutive model (in which theoretical and practical training follows the subject matter course) needs to be made.

The data on pre-service training requirements can easily be converted into the total number of years of education and teacher training. The duration of pre-service training for new teachers then refers to the typical number of full-time equivalent years of teacher training formally required to become a fully qualified teacher in a given country.

### Measuring teaching and working time

Countries differ widely in the way they measure teaching and working time. To obtain meaningful comparisons, the national concepts of teaching and working time need to be translated into an internationally comparable basis.

Defining and measuring “working time” is quite difficult for many groups of workers, including teachers. For this group, the difficulties in measuring working time arise mainly from the fact that part of the working time can be spent outside of the school. For example, in some countries, full-time teachers are required to be at school for a specified number of working hours per week (which may include teaching as well as non-teaching activities). In other countries or school systems, full-time teachers are only required to be at school for a specified number of hours for teaching (with no requirement for how much time they must spend in non-teaching activities). In yet other countries, there is no mandatory or formal amount of time that teachers must spend working, although there may be a customary amount of time that all civil servants work.

The situation can be complicated further when teachers’ work hours are set at the local or school level or when teachers can set their own work hours, based on the number of classes they are assigned to teach.

To deal with these differences adequately in international comparisons, appropriate taxonomies must be developed and estimation methods provided that allow countries to convert national data into the respective international categories. Harvey & Spinney (2000) have prepared a report for the ILO, providing in their table 2 an example of a taxonomy for teachers’ working time and discuss how it can be implemented in a time-use survey.

In order to obtain meaningful international comparisons of statutory teaching time, the national concepts of teaching periods need to be converted to the number of 60-minute unit equivalents. Periods of time formally allowed for breaks between lessons or groups of lessons should be excluded from teaching time, although they should be included in the measurement of working time.

### Measuring teachers’ salaries

In order to avoid that comparisons of average teachers’ salaries are distorted or the comparisons rendered more complicated by the age distribution of teachers (which differs significantly between countries, in

particular between developed and developing countries) it seems generally preferable to report salaries on the basis of statutory salaries rather than actual average wages.

Since pay scales differ between countries, it is important to base international comparisons on standardized anchor points in pay scales. For example, to capture the beginning of the pay scale, one can collect data on the average statutory gross salary per year of a full-time classroom teacher with the minimum level of training to be fully qualified at the beginning of his or her teaching career. Similarly, to capture the end of a pay scale, one can collect data on the average statutory maximum gross salary per year of a full-time classroom teacher with the highest level of qualifications. Finally, it is often useful to compare the salaries of an experienced teacher during mid-career. The OECD defines this as the average statutory gross salary per year of a full-time classroom teacher with the minimum level of training to be fully qualified and who has 15 years of experience.

One of the difficulties encountered when examining teacher compensation is that teachers in some countries receive substantial additional bonuses in addition to the amount received based on their educational qualifications and experience. It is useful to measure these as the difference in salary between what a particular teacher receives as earnings for work performed at a school and the amount they would be expected to receive given only their level of experience. Such bonuses need to be classified and reported consistently.

The OECD applies a classification for bonuses that distinguishes between bonuses related to educational, certification or training qualifications higher than the minimum qualification required, particular work assignments and responsibilities or subjects taught, outstanding performance in teaching and circumstances such as location, family responsibilities or age (independent of years of teaching experience).

The ILO’s data on average salary rates are meant to exclude bonuses and allowances other than cost-of-living allowances, while average earnings data are meant to exclude social security premiums and benefits and irregular bonuses (year-end, one-time), which accrue over a longer period of time than one pay period (ILO, 2000c).

Furthermore, teachers in some countries may receive additional non-monetary bonuses that are often difficult to value in monetary terms (e.g. reduced teaching time or more choice over the classes/subjects taught, housing, meals or transport).

Indicators on salaries can be expressed in absolute terms as well as in relative terms. For relative teacher compensation, GDP per capita or the average earnings of salary workers are often used as benchmarks. A more appropriate reference point, though more difficult to obtain, consists of the earnings of a person with

a similar generally tertiary level qualification (given that the completion of the tertiary level of education is a requirement for teachers in almost all countries).

### 6.3. Establishing a close dialogue between the users and providers of statistics

As teaching and learning evolve and the social and economic context of education undergo profound transformations, the demand for comparative information on the teaching profession will also change. A set of indicators on teachers and the teaching profession can therefore not be static but must adapt to these changes while providing a sufficient degree of stability to permit reliable analyses of trends.

A prerequisite for the effective functioning of any indicator system is that it is being developed through a close dialogue between social partners, policy-makers and analysts, subject matter experts and statisticians. These different stakeholders, together, need to answer questions such as: What phenomena are currently at the heart of the policy debate? How can they be made amenable to quantitative assessment? Are the resulting measures internationally valid, reliable and feasible in the field? The answers to these questions may be different in different economic and social context and may vary over time.

As this report illustrates, while this process and the dialogue it implies are now generally well established in developed countries, much work remains to be accomplished to close the data gaps in the majority of developing countries, both to assist in management of their education development and to participate in the international debate.





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# Annex

Data for Figure 1

**Table 1: Number of teachers by level of education, 1990-1997 (millions)**

		Pre-primary	Primary	Secondary	Tertiary	Total
Developed Countries	1990	2.677	5.180	8.080	2.937	18.873
	1997	2.437	5.340	9.002	3.452	20.231
Developing Countries of which:	1990	1.912	17.446	11.300	2.163	32.821
	1997	2.417	19.479	14.015	2.832	38.742
Sub-Saharan Africa	1990	0.075	1.720	0.677	0.077	2.474
	1997	0.105	2.095	0.824	0.123	3.042
Arab States	1990	0.088	1.252	0.874	0.136	2.263
	1997	0.114	1.634	1.175	0.193	3.002
Latin America / Caribbean	1990	0.518	3.006	1.520	0.605	5.131
	1997	0.729	3.474	1.874	0.789	6.138
Eastern Asia / Oceania	1990	1.031	8.247	5.373	0.871	14.491
	1997	1.260	8.624	6.603	1.045	16.272
Southern Asia	1990	0.147	2.990	2.621	0.414	6.025
	1997	0.168	3.472	3.202	0.574	7.249
Least Developed Countries	1990	0.103	1.248	0.550	0.061	1.859
	1997	0.110	1.545	0.709	0.095	2.349

Source: UNESCO 1999

**Table 2: Ratio of students to teaching staff by level of education (based on full-time equivalents), 1999**

	Primary education	Lower secondary education	Upper secondary education
<b>OECD countries</b>			
Australia <sup>2</sup>	17.3	13.7	10.8
Austria	14.5	9.6	10.0
Belgium (Fl.)	13.9	x	x
Canada	18.7	18.7	20.0
Czech Republic	23.4	16.2	13.1
Denmark	10.6	11.6	13.2
Finland	17.4	10.6	16.6
France	19.6	12.9	12.7
Germany	21.0	16.4	12.4
Greece	13.5	10.6	10.7
Hungary	10.9	10.9	10.3
Iceland	13.3	x	13.5
Ireland	21.6	x	x
Italy	11.3	10.3	10.2
Japan	21.2	17.1	14.1
Korea	32.2	21.9	22.5
Luxembourg <sup>1</sup>	12.5	x	x
Mexico	27.2	35.5	26.9
Netherlands	16.6	x	x
New Zealand	20.5	19.8	12.8
Norway	12.6	10.1	9.9
Poland	m	m	m
Portugal	m	m	m
Slovak Republic	19.6	13.5	13.8
Spain	15.4	x	x
Sweden	13.3	13.3	15.5
Switzerland <sup>1</sup>	16.1	12.1	12.6
Turkey	30.0	a	16.1
United Kingdom <sup>3</sup>	22.5	17.4	12.4
United States	16.3	16.8	14.5
<b>Country mean</b>	<b>18.0</b>	<b>15.2</b>	<b>14.1</b>
<b>WEI participants</b>			
Argentina	20.7	15.5	12.4
Brazil	28.9	33.7	38.6
Chile	33.4	33.4	26.9
China	m	m	m
Egypt	23.4	22.0	12.6
Indonesia	23.1	19.8	17.2
Israel <sup>1</sup>	17.4	12.7	10.4
Jordan <sup>1</sup>	x	x	17.3
Malaysia <sup>1</sup>	21.6	x	x
Paraguay	19.7	x	x
Peru	23.5	17.2	x
Philippines	34.4	x	x
Russian Federation	17.6	m	m
Thailand	20.7	23.5	21.6
Tunisia <sup>1</sup>	23.9	25.8	21.3
Uruguay	20.6	11.7	24.8
Zimbabwe	41.0	14.5	m

1. Public institutions only.

2. Includes only general programmes at lower and upper secondary education.

3. Includes only general programmes at upper secondary education.

m = data not available

x = data included in another column/category of the table

a = data not applicable because the category does not apply

Source: OECD, 2001.



Data for Figure 5

**Table 3: Pupil/teacher ratios in primary education by region (based on head counts), 1990-1997**

	1990	1997
World Total	26.38	26.94
More Developed Regions	16.36	16.05
North America	15.68	16.08
Asia / Oceania	19.56	17.86
Europe	15.79	15.36
Countries in Transition	19.77	18.49
Less Developed Regions	29.11	29.77
Sub-Saharan Africa	37.46	38.68
Arab States	24.24	22.42
Latin America / Caribbean	25.12	24.52
Eastern Asia / Oceania	23.63	24.89
Southern Asia	45.50	45.42
Least Developed Countries	43.09	44.49

Source: UNESCO, 2000a and UNESCO Institute for Statistics database

Data for Figures 6 and 7

**Table 4: Distribution of teachers in public primary and upper secondary education by age group (based on head counts), 1999**

	Primary education					Upper secondary education				
	< 30 years of age	30-39 years of age	40-49 years of age	50-60 years of age	> 60 years of age	< 30 years of age	30-39 years of age	40-49 years of age	50-60 years of age	> 60 years of age
<b>OECD countries</b>										
Austria	16.0	30.7	38.0	14.4	0.9	6.8	28.1	40.5	23.3	1.3
Belgium (Fl.)	20.2	31.2	27.9	20.4	0.3	13.8	22.6	35.9	25.8	1.9
Canada	11.8	24.4	38.7	24.0	1.1	11.8	24.4	38.7	24.0	1.1
Czech Republic	15.1	27.0	24.6	28.8	4.5	9.4	26.3	30.6	27.6	6.2
Finland	13.8	32.5	28.4	24.6	0.6	5.7	25.4	34.4	29.8	4.7
France	12.6	28.7	37.6	20.9	0.2	11.2	26.1	31.5	30.3	0.9
Germany	6.6	14.9	38.1	36.7	3.7	3.0	22.2	39.9	30.8	4.1
Iceland	16.0	29.9	31.8	16.7	5.6	7.0	23.8	34.4	23.9	10.9
Ireland	13.3	28.5	33.6	19.0	5.7	x	x	x	x	x
Italy	4.7	27.0	39.7	24.7	3.9	0.2	17.7	45.0	33.7	3.4
Korea	22.0	31.2	29.8	15.1	2.0	10.6	43.7	30.9	12.7	2.2
Luxembourg <sup>1</sup>	26.8	21.0	29.4	22.5	0.4	x	x	x	x	x
Netherlands	14.2	21.0	40.1	23.2	1.4	7.1	18.7	39.7	32.4	2.1
New Zealand	19.3	21.3	36.0	20.2	3.3	13.2	21.5	37.8	23.9	3.6
Norway	x	x	x	x	x	6.7	19.4	34.1	32.5	7.3
Slovak Republic	24.2	22.7	27.5	22.7	2.9	15.8	28.4	33.0	19.1	3.7
Sweden	11.6	14.5	32.9	35.0	6.0	6.7	16.7	28.0	40.3	8.4
Switzerland <sup>1</sup>	21.0	25.3	33.6	18.0	2.1	5.4	26.5	35.1	27.2	5.7
United Kingdom <sup>2</sup>	20.5	20.0	36.9	21.8	0.7	17.5	22.1	38.5	20.9	0.9
<b>Country mean</b>	<b>16.1</b>	<b>25.1</b>	<b>33.6</b>	<b>22.7</b>	<b>2.5</b>	<b>8.9</b>	<b>24.3</b>	<b>35.8</b>	<b>27.0</b>	<b>4.0</b>
<b>WEI participants</b>										
Argentina	30.3	31.2	27.5	10.1	0.9	24.4	34.6	26.9	11.7	2.4
Brazil	35.0	36.1	22.5	5.4	1.0	29.1	32.6	28.9	8.8	0.7
Chile	8.7	23.9	37.1	25.5	4.8	10.5	31.4	35.4	18.0	4.7
China	33.4	26.9	26.9	12.7	0.1	40.6	33.8	13.7	11.6	0.4
Indonesia	52.1	34.6	9.7	3.6	n	19.0	51.4	20.4	8.2	1.0
Israel	22.0	31.5	32.6	12.6	1.3	11.9	28.1	33.7	21.3	5.0
Jordan	m	m	m	m	m	38.8	43.1	13.6	4.6	x
Malaysia	22.9	48.9	18.0	9.8	0.4	x	x	x	x	x
Philippines	9.9	24.9	21.1	36.7	7.4	12.8	37.9	30.7	15.7	2.9
Tunisia	m	m	m	m	m	27.8	42.3	23.8	6.1	n

1. Includes only public institutions.

2. Includes only general programmes at upper secondary education.

m = data not available

x = data included in another column/category of the table

a = data not applicable because the category does not apply

Source: OECD 2001.

**Table 5a : Percentage of female teachers by level of education, 1990 and 1997**

	Percentage of female teachers					
	1990				1997	
	Pre-primary	Primary	Secondary		Pre-primary	Primary
<b>WORLD TOTAL</b>	94.5	56.3	44.8		93.7	58.3
More developed regions	92.6	77.1	49.6		92.9	79.0
Countries in transition	99.8	87.5	64.2		99.7	88.4
	90.7	49.1	37.4		90.5	51.9
Less developed regions of which:						
Sub-Saharan Africa	86.8	39.4	32.8		91.5	43.3
Arab States	58.8	51.4	39.1		74.4	52.3
Latin America/Caribbean	97.2	77.1	48.6		94.5	76.7
Eastern Asia/Oceania	96.2	47.4	36.1		94.8	52.1
Southern Asia	46.6	30.6	34.0		49.5	32.2
Least developed countries	38.1	33.3	27.0		43.9	34.5

Source: UNESCO, 2000a

**Table 5b. Teaching staff in primary education: Percentage female, 1990 and 1998, and percentage trained teachers by gender, 1998**

Country	Percentage of female teachers		1998			GPI (F/M)	Gender gap (M-F)
	1990	1998	Trained teachers as % of total				
			Both sexes	Male	Female		
<b>Africa</b>							
Algeria	39	46	94	92	96	1.04	-4
Benin	25	23	...	...	...	...	...
Botswana	80	82	92	87	93	1.07	-6
Burkina Faso	27	25	60	59	61	1.03	-2
Burundi <sup>1</sup>	46	54	87	...	...	...	...
Cameroon	30	36	...	...	...	...	...
Cape Verde	60	62	...	...	...	...	...
Central African Republic <sup>1</sup>	25	22	100	100	100	1.00	0
Chad	6	9	44	...	...	...	...
Comoros	...	26	47	48	46	0.96	2
Congo	32	42	81	78	86	1.10	-8
Côte d'Ivoire	19	20	...	...	...	...	...
Democratic Rep. of Congo	24	21	...	...	...	...	...
Djibouti	37	28	90	88	96	1.09	-8
Egypt	52	52	...	...	...	...	...
Equatorial Guinea	27	28	100	100	100	1.00	0
Eritrea	45	35	73	75	69	0.92	6
Ethiopia <sup>2</sup>	24	28	91	91	92	1.01	-1
Gabon	...	42	84	83	86	1.04	-3
Gambia	* 31	29	72	...	...	...	...
Ghana	36	...	...	...	...	...	...
Guinea	22	25	100	100	100	1.00	0
Guinea-Bissau <sup>3</sup>	...	21	28	26	34	1.31	-8
Kenya	37	42	97	96	97	1.01	-1
Lesotho	80	80	44	41	45	1.10	-4
Liberia	...	19	...	...	...	...	...
Libyan Arab Jamahiriya	...	* 53	...	...	...	...	...
Madagascar	...	58	...	...	...	...	...
Malawi <sup>4</sup>	31	* 40	54 *	57 *	49	0.86	8
Mali <sup>4, 5</sup>	23	23	73	...	...	...	...
Mauritania	18	26	99	99	100	1.01	-1

**Table 5b. Teaching staff in primary education: Percentage female, 1990 and 1998, and percentage trained teachers by gender, 1998 (contd.)**

Country	Percentage of female teachers		1998			GPI (F/M)	Gender gap (M-F)	
			Trained teachers as % of total					
	1990	1998	Both sexes	Male	Female			
<b>Africa (contd.)</b>								
Mauritius	45	53	100	100	100	1.00	0	
Morocco	37	39	...	...	...	...	...	
Mozambique	23	24	33	33	33	1.00	0	
Namibia	...	67	29	29	29	1.00	0	
Niger	33	31	100	100	99	0.99	1	
Nigeria	43	...	...	...	...	...	...	
Rwanda	46	55	50	53	49	0.92	4	
Sao Tome and Principe	...	...	...	...	...	...	...	
Senegal	27	...	...	...	...	...	...	
Seychelles	...	88	84	78	84	1.08	-6	
Sierra Leone <sup>3</sup>	...	40	61	63	58	0.92	5	
South Africa <sup>6</sup>	58	78	*	63	*	62	0.94	4
Sudan <sup>2</sup>	51	68	52	79	39	0.49	40	
Swaziland	79	75	91	89	92	1.03	-3	
Togo	19	13	38	34	61	1.79	-27	
Tunisia	45	50	100	100	100	1.00	0	
Uganda	30	33	...	...	...	...	...	
United Republic of Tanzania	41	44	44	44	44	1.00	0	
Zambia	...	47	89	86	92	1.07	-6	
Zimbabwe <sup>3</sup>	39	47	94	...	...	...	...	
<b>America, North</b>								
Antigua and Barbuda	...	85	...	...	...	...	...	
Bahamas	...	66	...	...	...	...	...	
Barbados	72	76	84	...	...	...	...	
Belize	70	70	61	56	63	1.12	-7	
British Virgin Islands	...	86	72	55	75	1.37	-20	
Costa Rica	80	80	93	...	...	...	...	
Cuba	79	79	100	100	100	1.00	0	
Dominica	81	76	64	46	70	1.53	-24	
Dominican Republic	...	82	74	64	77	1.20	-13	
El Salvador	67	...	...	...	...	...	...	
Grenada	72	...	...	...	...	...	...	
Haiti <sup>7</sup>	45	31	28	33	18	0.54	15	
Honduras <sup>4</sup>	74	73	...	...	...	...	...	
Jamaica	* 88	90	...	...	...	...	...	
Mexico	...	66	...	...	...	...	...	
Netherlands Antilles	...	86	100	100	100	1.00	0	
Nicaragua <sup>3</sup>	87	83	...	...	...	...	...	
Panama	74	...	...	...	...	...	...	
St. Kitts and Nevis	79	83	...	...	...	...	...	
St. Lucia	83	83	96	...	...	...	...	
St. Vincent and the Grenadines	67	...	...	...	...	...	...	
Trinidad and Tobago	70	76	71	74	71	0.96	3	
<b>America, South</b>								
Argentina	...	89	...	...	...	...	...	
Bolivia	57	61	...	...	...	...	...	
Brazil	...	94	...	...	...	...	...	
Chile	73	74	94	...	...	...	...	
Ecuador	...	68	...	...	...	...	...	
Guyana	76	86	52	52	52	0.99	0	
Paraguay	...	76	...	...	...	...	...	
Peru	...	60	96	...	...	...	...	
Suriname	84	...	...	...	...	...	...	
Uruguay	...	92	...	...	...	...	...	
Venezuela <sup>3</sup>	74	...	...	...	...	...	...	

**Table 5b. Teaching staff in primary education: Percentage female, 1990 and 1998, and percentage trained teachers by gender, 1998 (contd.)**

Country	Percentage of female teachers		1998			GPI (F/M)	Gender gap (M-F)
	1990	1998	Trained teachers as % of total				
			Both sexes	Male	Female		
Asia							
Afghanistan	59	...	...	...	...	...	...
Azerbaijan	...	83	100	100	100	1.00	0
Bahrain	54 *	60	...	...	...	...	...
Bangladesh	19 *	19	...	...	...	...	...
Bhutan	...	41	100	100	100	1.00	0
Brunei Darussalam	57	65	...	...	...	...	...
Cambodia	31 *	37	95	95	95	1.00	0
China	43	49	...	...	...	...	...
Cyprus	60	...	...	...	...	...	...
Georgia	92	...	...	...	...	...	...
India	29	34	...	...	...	...	...
Indonesia <sup>3</sup>	51	54	63	...	...	...	...
Iran, Islamic Republic of <sup>3</sup>	53	54	...	...	...	...	...
Iraq	70	72	...	...	...	...	...
Jordan	62	...	...	...	...	...	...
Kazakhstan	96	93	...	...	...	...	...
Korea, Republic of	50	67	...	...	...	...	...
Kuwait	61	73	100	100	100	1.00	0
Kyrgyzstan	81	...	48	49	48	0.98	1
Lao PDR	38	43	76	69	85	1.23	-16
Lebanon	...	82	23	23	23	1.00	0
Macau	...	87	81	62	84	1.35	-22
Malaysia	57	63	97	...	...	...	...
Maldives <sup>1</sup>	...	60	67	70	65	0.93	5
Mongolia	90 *	90	94	...	...	...	...
Myanmar	62	73	...	...	...	...	...
Nepal	14	23	46	50	35	0.70	15
Oman	47	52	100	100	99	0.99	1
Pakistan	27 *	38	* 56	* 57	56	0.98	1
Palestinian Aut. Terr. <sup>2</sup>	...	51	100	100	100	1.00	0
Philippines <sup>4</sup>	...	87	100	100	100	1.00	0
Qatar	72	75	...	...	...	...	...
Saudi Arabia	48	54	...	...	...	...	...
Singapore	71	...	...	...	...	...	...
Syrian Arab Republic	64	65	92	87	95	1.09	-8
Tajikistan	49	...	...	...	...	...	...
Thailand	...	63	...	...	...	...	...
Turkey	43	44	...	...	...	...	...
United Arab Emirates	64	73	71	74	70	0.95	4
Uzbekistan	79	...	...	...	...	...	...
Viet Nam	...	78	78	75	78	1.04	-3
Yemen <sup>2</sup>	...	20	75	77	68	0.88	9
Oceania							
Fiji	57	57	97	97	98	1.01	-1
Kiribati	57	64	...	...	...	...	...
Papua New Guinea	32	38	100	100	100	1.00	0
Samoa	72	73	...	...	...	...	...
Solomon Islands <sup>4</sup>	...	46	* 79	...	...	...	...
Tonga	69	70	87	75	93	1.24	-18
Tuvalu	72	...	...	...	...	...	...
Vanuatu <sup>7</sup>	40	45	47	44.7	48.7	1.09	-4

1. Data on trained teachers refer to public education only. 2. Data on trained teachers include the first stage of secondary education. 3. Data for the latest year refer to 1999. 4. Data for the latest year refer to 1997. 5. Data are from the EFA 2000 National Report. 6. Data on trained teachers include pre-primary education. 7. Data for 1990 include pre-primary teachers.

Source: Cavicchioni, forthcoming.

**Table 6: Percentage of women among teaching staff in public and private institutions by level of education (based on head counts), 1999**

	Pre-primary education	Primary education	Lower secondary education	Upper secondary education (general programmes)	Upper secondary education (vocational programmes)
<b>OECD countries</b>					
Australia	m	m	m	m	m
Austria	98.8	88.5	63.8	55.6	45.6
Belgium (Fl.)	99.1	73.3	x	x	x
Canada	67.7	67.5	67.3	66.8	a
Czech Republic	99.8	84.5	81.0	67.0	54.5
Denmark	92.0	63.0	63.1	32.5	27.8
Finland	96.3	71.2	70.6	67.7	51.5
France	77.7	77.7	62.8	52.7	47.7
Germany	96.7	81.5	56.7	38.7	39.3
Hungary	100.0	85.5	85.6	68.3	54.2
Iceland	98.2	76.6	x	x	x
Ireland	92.2	84.8	55.9	x	x
Italy	99.5	94.6	73.3	x	x
Korea	99.8	66.8	56.2	26.4	29.5
Luxembourg <sup>1</sup>	97.7	60.0	37.9	x	x
Mexico	93.8	66.5	48.5	39.2	46.3
Netherlands	x	71.1	x	36.6	46.5
New Zealand	98.5	81.9	61.7	54.5	50.3
Norway	m	x	71.9	43.7	x
Slovak Republic	99.9	92.6	76.9	71.5	64.8
Spain	92.8	68.3	x	x	x
Sweden	96.7	79.9	61.9	54.0	45.7
Switzerland <sup>1</sup>	99.4	72.4	45.0	36.5	27.7
United Kingdom	89.9	75.6	54.8	56.5	56.0
United States	94.7	86.5	60.2	50.8	a
<b>Country mean</b>	<b>94.6</b>	<b>77.0</b>	<b>62.7</b>	<b>51.1</b>	<b>45.8</b>

1. Includes only public institutions.

m = data not available

x = data included in another column/category of the table

a = data not applicable because the category does not apply

Source: OECD, 2001.

Table 7: Percentage of women among teaching staff in public primary and upper secondary education by age group (based on head counts), 1999

	Primary education					Upper secondary education				
	< 30 years of age	30-39 years of age	40-49 years of age	50-60 years of age	> 60 years of age	< 30 years of age	30-39 years of age	40-49 years of age	50-60 years of age	> 60 years of age
<b>OECD countries</b>										
Austria	92.7	89.9	89.1	82.6	41.1	67.6	57.1	47.6	34.2	23.8
Belgium (Fl.)	84.2	76.4	72.4	59.0	52.2	66.3	60.9	55.2	45.3	17.6
Canada	78.1	70.8	69.6	57.2	56.7	77.6	70.2	68.9	56.5	56.0
Czech Republic	83.2	86.8	85.6	84.3	72.5	61.8	61.8	58.5	50.0	30.5
Finland	79.5	69.6	71.1	69.2	62.8	63.5	60.8	53.7	55.7	56.6
France	88.7	77.9	75.0	75.8	72.7	54.4	51.8	50.7	48.0	46.5
Germany	95.2	92.7	85.3	73.1	57.5	59.0	50.8	41.0	28.3	21.2
Iceland	74.7	79.3	78.6	74.4	62.9	49.5	51.6	43.3	38.3	34.4
Ireland	89.7	86.9	81.2	83.3	88.0	x	x	x	x	x
Italy	97.1	97.3	95.1	91.8	86.0	35.2	67.0	59.7	51.7	40.6
Korea	83.2	80.1	58.4	38.1	19.4	63.9	33.0	17.5	7.7	3.1
Luxembourg <sup>1</sup>	70.4	58.8	56.4	53.2	60.0	x	x	x	x	x
Netherlands	86.9	80.7	67.3	60.0	64.0	60.9	50.3	39.6	30.8	24.9
New Zealand	86.0	82.8	82.4	78.0	82.2	63.3	54.2	53.0	52.3	53.9
Norway	x	x	x	x	x	59.4	52.9	45.3	36.4	29.6
Slovak Republic	91.9	94.9	95.9	88.6	79.9	71.8	75.0	68.4	52.2	24.4
Sweden	81.6	75.9	79.5	80.8	83.6	55.0	51.5	48.1	50.6	46.8
Switzerland <sup>1</sup>	83.8	73.5	68.6	66.8	55.1	43.8	37.3	31.0	27.5	19.5
United Kingdom <sup>2</sup>	83.0	72.5	74.6	73.2	73.1	68.0	56.9	54.1	51.4	48.6
<b>Country mean</b>	<b>85.0</b>	<b>80.4</b>	<b>77.0</b>	<b>71.6</b>	<b>65.0</b>	<b>60.1</b>	<b>55.5</b>	<b>49.2</b>	<b>42.2</b>	<b>34.0</b>
<b>WEI participants</b>										
Argentina	87.0	87.0	92.9	92.0	85.8	63.1	64.5	70.0	65.8	51.5
Brazil	90.0	95.6	96.6	94.7	81.5	66.6	77.9	74.5	71.3	56.3
Chile	79.5	76.4	74.2	72.9	58.9	55.5	54.1	50.9	55.1	41.9
China	60.5	50.2	42.7	29.1	9.9	44.8	33.8	30.9	20.4	11.4
Indonesia	53.7	53.7	53.7	53.7	n	38.5	38.3	38.4	37.5	36.4
Israel	85.6	83.7	84.0	81.8	63.1	77.0	66.7	65.9	60.2	40.5
Jordan	x	x	x	x	x	55.8	51.2	14.7	1.8	x
Malaysia	70.4	65.1	57.3	46.0	29.4	x	x	x	x	x
Philippines	88.2	88.5	89.7	85.7	84.2	74.7	74.5	78.7	77.1	74.9
Tunisia	x	x	x	x	x	50.0	39.0	35.8	31.5	11.1

1. Includes only public institutions.

2. Includes only general programmes at upper secondary education.

x = data included in another column/category of the table

Source: OECD 2001.

Table 8: Number of full-time and part-time teachers by gender, 1996/97

('1000)

ISCED 1							
Full-time				Part-time			
Men	Women	Total		Men	Women	Total	
EUROPEAN UNION							
EU-15 *	279.9	945.0	1 224.9		40.0	247.8	287.7
B	14.8	49.7	64.6		2.6	21.5	24.1
DK *	12.1	18.1	30.2		1.7	2.6	4.2
D	30.6	73.6	104.2		11.5	108.9	120.3
EL	20.3	26.5	46.8		-	-	-
E	50.8	102.0	152.8		4.2	8.9	13.1
F	42.7	153.9	196.5		2.5	12.2	14.7
IRL	3.5	12.6	16.1		0.0	0.1	0.1
I	15.7	234.7	250.5		0.0	0.0	0.0
L	0.9	1.4	2.3		0.0	0.2	0.2
NL	21.7	24.5	46.2		4.6	49.7	54.2
A	5.0	24.0	29.0		0.1	2.1	2.2
P	(-)	(-)	(-)		(-)	(-)	(-)
FIN	6.6	14.6	21.2		0.1	0.2	0.3
S	10.4	29.3	39.7		5.3	13.4	18.7
UK	44.9	180.0	224.9		9.9	48.6	58.6
EFTA/EEA							
IS	0.8	1.7	2.5	incl 2!	0.2	1.0	1.2
LI	(-)	(-)	(-)		(-)	(-)	(-)
NO	16.2	23.2	39.4	incl 2!	2.7	14.3	17.0
PRE-ACCESSION COUNTRIES							
BG	2.8	23.1	25.9		-	-	-
CZ	2.5	33.0	35.5		(-)	(-)	(-)
EE	0.6	6.1	6.7		0.1	0.3	0.4
LV	0.3	6.9	7.3		0.2	3.4	3.6
LT	0.8	17.6	18.4		(-)	(-)	(-)
HU	2.4	36.3	38.7		0.2	0.4	0.7
PL	(-)	(-)	325.7		(-)	(-)	(-)
RO	10.2	58.0	68.2		0.5	3.1	3.6
SI	0.5	5.8	6.3		0.2	1.2	1.3
SK	1.3	15.6	16.9		-	-	-
CY	1.3	2.9	4.1		0	0	0

('1000)

ISCED 2							
Full-time				Part-time			
Men	Women	Total		Men	Women	Total	
EUROPEAN UNION							
EU	345.0	427.2	772.2		53.8	145.0	198.8
B	(-)	(-)	(-)	x in 3	(-)	(-)	(-)
DK	7.4	10.8	18.2		1.1	1.5	2.6
D	133.9	109.2	243.0		23.1	93.1	116.2
EL	10.5	18.9	29.4		2.3	3.7	6.1
E	27.5	37.9	65.5	96	2.7	3.6	6.4
F	(-)	(-)	(-)	x in 3	(-)	(-)	(-)
IRL	(-)	(-)	(-)	x in 3	(-)	(-)	(-)
I	54.0	131.4	185.3		0.0	0.0	0.0
L	(-)	(-)	(-)	x in 3	(-)	(-)	(-)
NL	27.0	3.4	30.4	only FTE	11.6	16.4	28.0
A	16.3	22.6	38.9		0.5	4.0	4.5
P	(-)	(-)	(-)		(-)	(-)	(-)
FIN	6.2	13.4	19.6		0.2	0.5	0.8
S	5.2	14.7	19.9		3.1	7.6	10.7
UK	57.0	64.9	121.9		9.2	14.5	23.7
EFTA/EEA							
IS	:	:	:		:	:	:
LI	:	:	:		:	:	:
NO	:	:	:		:	:	:
PREACCESSION COUNTRIES							
BG	8.4	26.2	34.6		-	-	-
CZ	11.6	34.7	46.3		(-)	(-)	(-)
EE	0.8	4.6	5.4		0.2	0.4	0.6
LV	2.1	10.6	12.7		1.0	5.2	6.2
LT	(-)	(-)	(-)		(-)	(-)	(-)
HU	11.2	39.3	50.5		1.0	1.9	2.9
PL	(-)	(-)	(-)		(-)	(-)	(-)
RO	28.7	56.8	85.5		6.1	12.0	18.1
SI	1.3	5.4	6.7		0.4	0.9	1.3
SK	6.2	20.5	26.8		0.1	0.1	0.2
CY	(-)	(-)	(-)		(-)	(-)	(-)

(\*1000)

ISCED 3							
Full-time					Part-time		
Men	Women	Total	Men		Women	Total	
EUROPEAN UNION							
EU	692.5	698.6	1 391.2		155.8	257.3	413.2
B	43.0	39.2	82.2	isc 2 et 3	13.6	29.6	43.2
DK	11.9	5.0	16.9		8.1	3.6	11.7
D	93.2	29.2	122.4		24.3	36.4	60.8
EL	15.8	13.5	29.3		2.7	3.1	5.9
E	92.0	92.8	184.8		11.9	10.5	22.4
F	177.2	221.0	398.2	isc 2 et 3	23.1	62.2	85.3
IRL	9.6	11.8	21.4	isc 2 et 3	2.7	3.1	5.9
I	124.5	167.2	291.7		0.0	0.0	0.0
L	1.7	1.0	2.7	isc 2 et 3	0.0	0.1	0.2
NL	10.2	1.7	11.9	FTE	6.1	11.3	17.5
A	(:)	(:)	(:)	tot and FTE	(:)	(:)	(:)
P	(:)	(:)	(:)		(:)	(:)	(:)
FIN	9.1	12.0	21.1		1.1	1.3	2.4
S	7.2	5.2	12.3		16.8	19.0	35.8
UK	97.0	99.2	196.3		45.2	77.0	122.3
EFTA/EEA							
IS	0.6	0.4	1.0		0.1	0.1	0.2
LI	(:)	(:)	(:)		(:)	(:)	(:)
NO	13.8	7.2	20.9		3.3	4.9	8.1
PREACCESSION COUNTRIES							
BG	10.1	22.3	32.4		-	-	-
CZ	25.8	30.9	56.7		(:)	(:)	(:)
EE	1.1	4.1	5.2		0.3	0.6	0.9
LV	2.2	5.2	7.5		0.8	2.0	2.8
LT	7.9	29.1	37.0		(:)	(:)	(:)
HU	21.4	23.9	45.4		5.7	6.2	11.9
PO	(:)	(:)	126.1		(:)	(:)	(:)
RO	24.2	35.7	59.9		6.2	9.1	15.3
SI	2.4	3.8	6.2		0.8	1.3	2.1
SK	7.1	14.0	21.1		2.7	3.3	6.0
CY	2.8	3.0	5.7		0.1	0.1	0.1

\* Estimate (: ) Not available  
Source: Eurostat, UOE (Eurydice, 2000)



Data for Figure 17

**Table 9: Percentage of part-time and full-time teaching staff by level of education, 1997**

		Part-time	Full-time
Argentina	Pre-primary	49523	4046
	Primary	201116	27093
	Lower secondary	122639	32491
	Upper secondary	73212	22924
Indonesia	Pre-primary	57062	36900
	Primary	60918	1104868
	Lower secondary	123406	307575
	Upper secondary	133213	204592
Philippines	Pre-primary	7778	6896
	Primary	70045	277681
	Lower secondary	3633	112055
	Upper secondary	1030	28942
Chile	Pre-primary	964	10066
	Primary	5344	51488
	Lower secondary	1481	14275
	Upper secondary	6738	24801
Thailand	Pre-primary	m	
	Primary	7493	281637
	Lower secondary	18592	119226
	Upper secondary	14393	90619
Paraguay	Pre-primary	39	4990
	Primary	5505	45918
	Lower secondary	a	
	Upper secondary	a	34191
Malaysia	Pre-primary	a	19970
	Primary	a	133517
	Lower secondary	a	66418
	Upper secondary	m	
Russia	Pre-primary	a	641800
	Primary	a	366900
	Lower secondary	m	m
	Upper secondary	a	1578000
Jordan	Pre-primary	a	3109
	Primary	a	51455
	Lower secondary	a	
	Upper secondary	a	8973
Zimbabwe	Pre-primary	a	m
	Primary	a	64521
	Lower secondary	a	31568
	Upper secondary	a	1936

m = data not available

a = data not applicable because the category does not apply

Source: OECD database

Data for Figure 18

**Table 10: Number of years of postsecondary education required to become a teacher by education level, 1999**

	Years of postsecondary education required of prospective teachers		
	Primary teachers	Lower secondary teachers	Upper secondary teachers
<b>OECD countries</b>			
Australia	3.5	3.5	3.5
Austria	3	4.5	5.5
Belgium	3	3	4.5
Bulgaria	4	5	5
Cyprus	4	4	4
Czech Republic	4.5	4.5	5
Denmark	4	4	5.5
Estonia	4	4	5
Finland	4.5	5.5	5.5
France	5	5.5	5.5
Germany	5.5	6	6.5
Greece	4	4.5	4.5
Hungary	4	4	5
Ireland	4	4.5	4.5
Italy	4	6	6
Latvia	5	5	5
Lithuania	3.5	4.5	4.5
Netherlands	4	4	5
New Zealand	3.5	4.5	4.5
Norway	4	4	5
Poland	4	5	5
Portugal	4.5	5.5	5.5
Romania	3.5	4	4.5
Slovakia	4	5	5
Slovenia	4	4.5	4.5
Spain	3	6	6
Sweden	4.5	4.5	5
Turkey	4		5
United Kingdom	4.5	4.5	4.5
United States	4	4	4
<b>WEI countries</b>			
Argentina	2.5	3.25	5
Brazil (1)	3.5	4	4
Chile	4	4	5
Indonesia	3	3.3	3.3
Malaysia	3	3	3
Paraguay (1)	3	4	3
Philippines	4	4	4
Peru	5	5	5
Russian Federation	2	5	5
Thailand	4	4	
Uruguay	3	4	4

(1) Prospective primary teachers have the choice of attending either a secondary-level programme leading to an ISCED 3 qualification, or a tertiary-level programme leading to an ISCED 5 (A or B) qualification.

Source: OECD/UNESCO, 2001

Data for Figure 19

**Table 11: Distribution of 8th-grade mathematics teachers by highest level of mathematics completed, 1995**

	Teacher training without completing secondary education	Secondary education only	Secondary and 1 or 2 years teacher training	Secondary and 3 or 4 years teacher training	BA or equivalent and no teacher training	BA or equivalent and teacher training	MA/PhD and no teacher training	MA/PhD and teacher training
Australia			2.7	24.0		46.1		27.3
Canada			1.1	7.4		78.9	0.2	12.4
Czech Republic		0.6					1.9	97.5
France	0.5	5.0	15.3	10.3	23.7	18.0	12.8	14.4
Greece					87.6	10.6	0.8	0.9
Hungary				86.2	1.5	9.5	2.1	0.7
Iceland <sup>1</sup>	30.3	0.5	9.1		6.3	53.6	0.1	0.0
Ireland			0.6		2.3	87.8		9.2
Korea						91.6		8.4
Netherlands	0.3	1.3	9.9	67.4		3.1	2.5	15.5
New Zealand				6.2	5.1	76.5	0.7	11.4
Norway <sup>1</sup>				42.1	1.8	47.8	0.9	7.4
Portugal					32.0	68.1		
Spain	10.0			20.0	59.2	7.0	3.8	
Sweden		2.8	1.1	5.6	23.1	64.9		2.6
Switzerland		0.7	7.1	28.2		52.9	2.0	9.2
United Kingdom <sup>2</sup>				27.4	7.7	54.4	4.5	6.0
United States					0.8	53.7	0.7	44.8

Note: Data are expressed as a percentage of 8th-grade students taught. The highest level of formal education is reported according to the IEA/TIMSS classification and not according to the ISCED-97 classification.

1. Data for mathematics teachers are only available for 70-84 % of 8th-grade students.

2. Data for mathematics teachers are only available for 50-69 % of 8th-grade students.

Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS.

Data for Figure 20

**Table 12: Percentage of teachers with tertiary qualifications by level of education, 1999**

	Primary education	Lower secondary education	Upper secondary education
Argentina <sup>1</sup>	65.0	65.0	65.0
Brazil <sup>1</sup>	21.6	75.8	89.3
Chile <sup>1</sup>	94.2	94.2	92.3
China <sup>1</sup>	12.8	52.7	95.4
Egypt	23.0	89.0	76.3
Indonesia <sup>2</sup>	41.2	100.0	100.0
Jordan <sup>1</sup>	99.5	99.5	95.7
Malaysia <sup>1</sup>	96.6	96.4	96.4
Peru <sup>1</sup>	84.7	82.8	82.8
Philippines <sup>1</sup>	100.0	100.0	100.0
Thailand	82.3	90.6	90.1
Tunisia <sup>1</sup>	14.5	84.0	96.3
Zimbabwe	94.4	98.8	98.8
<b>WEI mean</b>	63.9	86.8	90.7

1. Year of reference 1998.

2. Year of reference 2000.

Source: OECD/UNESCO 2001

Data for Figure 21

**Table 13: Average percentage of full-time primary teachers with different levels of education, 1995**

	Primary education	Lower secondary education	Upper secondary education	More
Bangladesh	0.40	43.80	36.50	19.30
Benin	0.00	91.80	7.20	0.90
Bhutan	14.10	15.80	49.60	20.40
Burkina Faso	0.70	69.80	26.30	3.30
Cape Verde	62.60	24.10	9.90	3.40
Equatorial Guinea	19.10	57.90	10.50	12.50
Ethiopia	0.00	0.40	79.20	20.40
Madagascar	0.60	45.30	44.80	9.30
Maldives	46.30	42.80	3.50	7.40
Nepal	25.20	6.70	42.30	25.80
Tanzania	63.50	27.00	9.40	0.00
Togo	17.50	59.50	18.80	4.20
Uganda	20.10	71.30	8.60	0.00
Zambia	1.00	23.10	75.90	0.00

Source: Schleicher *et al.*, 1995

Data for Figure 22

**Table 14: Average percentage of full-time teachers without any professional training, 1995**

	Teaching certificate	Other qualification	Nothing
Bangladesh	80.8	0.9	18.3
Benin	55.2	47.1	0.9
Bhutan	83.8	7.9	8.3
Burkina Faso	70.2	2.7	27.1
Cape Verde	57.9	7.6	34.6
Equatorial Guinea	85.1	7.4	7.5
Ethiopia	86.4	1	12.6
Madagascar	68	21.9	10.2
Maldives	70.4	7.1	22.4
Nepal	74.6	22.3	3.1
Tanzania	100	0	0
Togo	47	12.4	40.7
Uganda	49.5	1	49.5
Zambia	81.6	4.3	14.1

Source: Schleicher *et al.*, 1995

**Table 15: Number of hours of work per week in primary education , 1999 or latest year available**

	N hours 1999 or latest year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Antigua	40	.	.	.	.	.	.	40	.	.	.
Anguilla	32	.	.	.	.	.	.	.	.	.	32.0
Angola	44	.	.	.	.	.	.	.	.	.	44
Australia	36.4	.	.	.	36.4	.	.	.	.	.	.
Azerbaijan	20	.	.	.	.	.	.	.	.	.	20
Barbados	30	.	.	.	.	.	30	.	.	.	.
Bangladesh	39	.	.	.	.	.	.	.	3	9	.
Burkina Faso	40	.	40	.	.	.	.	.	.	.	.
Bahrain	36	.	.	.	.	.	.	.	.	36	.
Benin	40	.	40.00	.	.	.	.	.	.	.	.
Bermuda	35	40.0	40.0	35.0	.	35.0	35.0	.	35.0	.	.
Bolivia	18.5	.	.	.	.	.	.	.	.	.	21
Bahamas	35	.	35.00	.	.	.	.	.	.	.	.
Belarus	18	.	.	.	.	.	21	20	18	18	18
Belize	39.5	.	.	.	.	39.5	.	.	.	.	.
Central African Rep.	40	.	40	40	30	.	48	40	40	.	.
Côte d'Ivoire	32	40	.	.	.	.	.	32	32	.	.
Cyprus	33	.	.	.	.	.	.	.	33.0	.	.
Czech Republic	42.5	.	.	.	.	.	.	.	.	.	42.50
Germany	38.5	.	.	.	.	.	.	.	.	.	38.5
Djibouti	40	.	.	.	.	.	.	40	.	.	.
Dominican Rep.	30	.	.	.	.	.	.	.	30	.	.
Algeria	40	.	.	44	.	.	.	44	40	40	.
Estonia	31.9	.	.	.	.	31.9	.	.	.	.	.
Eritrea	48	.	.	.	.	.	.	.	.	.	48
Ethiopia	39	.	.	.	.	39	.	.	.	.	.
Finland	23	21.0	21.0	23.0	23.0	23.0	23.0	.	.	.	.
Falkland Inland	36.5	.	.	36.25	.	.	.	.	.	.	.
Grenada	40	.	.	.	.	.	40	.	.	.	.
Ghana	40	.	.	.	40	.	.	.	.	.	.
Gibraltar	39	.	39.0	.	.	.	.	.	.	.	.
Guyana	40	.	.	.	.	.	.	.	.	40	40
Honduras	44	.	.	.	.	.	.	.	44	.	.
Isle of Man	25	25.00	.	.	.	.	.	.	.	.	.
Italy	25	.	.	22	22	28	25	25	25	25	25
Kyrgyzstan	16	.	.	.	.	.	.	.	.	.	16
Cambodia	48	.	.	.	.	.	.	.	.	.	48
Comores	37	.	.	.	.	.	.	37	.	.	.
Saint Lucia	31.15	.	31.15	.	.	.	.	.	.	.	.
Lesotho	40	40.00	.	.	.	.	.	.	.	.	.
Mali	40	40.00	.	.	.	.	.	.	.	.	.
Myanmar	35	.	.	.	.	.	.	.	.	.	35
Mauritius	30	40.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	.
Nicaragua	48	.	.	.	.	.	.	.	.	48	.
Netherlands	40	40.00	.	.	.	.	.	.	.	.	.
Norway	37.5	.	.	.	.	.	.	.	37.5	.	.
French Polynesia	18	18	.	.	.	.	.	.	.	.	.
Papua New Guinea	37	.	.	.	.	.	.	37	.	.	.
St. Pierre and Miquelon	.	.	.	.	.	.	.	.	.	.	.
Puerto Rico	40	40.0	.	.	.	.	.	.	.	.	.
Romania	40	40	40	40	35	37	39	40	40	40	40
Rwanda	45	.	45	.	.	.	.	.	.	.	.
Seychelles	35	.	35.00	.	.	.	.	.	.	.	.
Sudan	47	42	42	.	42	.	.	.	47	.	.
St. Helena	30	.	.	.	.	.	.	.	.	.	30.0
Slovakia	42	.	.	.	.	.	.	.	.	.	42.5
Sierra Leone	40	.	.	.	.	.	.	40	.	.	.
Senegal	40	.	.	40	.	.	.	.	.	.	.
Tchad	30	.	.	40	.	.	.	30	30	30	.
Tunisia	18	.	.	.	.	.	.	.	18	.	.
Trinidad and Tobago	40	40	.	.	.	.	.	.	40	.	.
Ukraine	19	.	.	.	.	.	.	.	.	.	19
Uruguay	21	20	21	21	.	.	.	.	.	.	.
St. Vincent / the Grenadines	40	.	.	.	.	.	35	35	40	40	40
Venezuela	30	40	.	.	.	.	.	.	30	.	.
Virgin Islands (US)	36	36	.	.	.	.	.	.	.	.	.
Yemen	36	.	.	.	.	.	.	36	.	.	.
Zambia	40	.	.	.	.	.	.	40	.	.	.

Note: Working hours are reported for the latest year available and, for countries where the number of working hours changed during the 1990s, for all years in which data were supplied

Source: ILO database

Data for figures 24-26

**Table 16: Annual contractual teaching time and non-teaching working time by level of education, 1992/93**

	Primary school		Lower secondary school		Upper secondary school	
	Working time	Teaching time	Working time	Teaching time	Working time	Teaching time
Belgium fr	947	849		697		637
Belgium fl	947	849		697		637
Denmark	1680	750	1680	750	1680	750
Germany		810		765		750
Greece	1045	656	946	512	946	512
Spain	1384	890	1384	623	1384	623
France	972	910		630		630
Ireland	846			720		720
Italy	1132	748	946	612	946	612
Luxembourg	788	687	589	559	589	559
Netherlands	1520	988	1520	912	1520	912
Austria	1520	828	1520	774	1520	720
Portugal	1820	875	1820	630	1820	560
Finland	968	874	892	798	854	760
Sweden	897	593	897	593	920	569
United Kingdom E/W, NI	1265		1265		1265	
United Kingdom SC	1070	903	1070	950	1070	950

*Note: The median was used for minimum and maximum figures.*

*Source: Eurydice, 1995a.*

Data for Figure 27

**Table 17: Average weekly teaching hours by level of education in selected countries, 1996-98**

		Pre-primary education	Primary education	Lower secondary education	Upper secondary general education	Upper secondary vocational education
High-income countries	Belgium	19	19.95			
	Norway		22.1	20		
Middle-income countries	Croatia		18-24 (+16-22)	20-24 (+16-20)	20-24 (+16-20)	20-28 (12-20)
	Malta	15.6	22.5	24.3		
	Saudi Arabia	14 (+13)	18 (+12)	18 (+12)	18 (+12)	20 (+15)
	Syrian Arab Republic	32	30	19-21 (+15)	19-21 (+15)	
Low-income countries	Bangladesh		36 (+7,5)			
	Benin	28	28	18-20	18-20	
	Ghana	20 (+15)	22 (+20)	25 (+20)	16 (+17)	18 (+27)
	Mozambique		24 (+14)	24	24 (+4)	18-24
	Niger		27.5	24	18	
	Sudan		24 (+4-6)	22 (+4-6)	22 (+4-6)	
	United Rep.of Tanzania		40 (all tasks)	18-24	18-24	

*Note: Figures in the brackets are non-teaching working hours*

*Source: IBE 1999 (in ILO, 2000a).*

Data for Figures 28-30

**Table 18: Statutory number of teaching hours per year in public institutions by level of education, 1999**

*Calculated net contact time in hours per year in public institutions, by level of education*

	Primary education	Lower secondary education	Upper secondary education, general programmes
<b>OECD countries</b>			
Australia	996	955	941
Austria	684	658	623
Belgium (Fl.)	840	720	675
Belgium (Fr.)	854	733	671
Czech Republic	739	709	680
Denmark	644	644	500
Finland	656	656	627
France	892	634	589
Germany	783	733	685
Greece	780	629	629
Hungary	583	555	555
Iceland	636	636	464
Ireland	915	735	735
Italy	748	612	612
Korea	658	507	492
Mexico	800	832	m
Netherlands	930	868	868
New Zealand	985	930	874
Norway	713	633	505
Portugal	900	666	594
Scotland	950	893	893
Spain	788	561	548
Switzerland	884	859	674
Turkey	720	576	504
United States	958	964	943
<b>Country mean</b>	<b>801</b>	<b>716</b>	<b>662</b>
<b>WEI participants</b>			
Argentina	810	900	900
Brazil	800	800	800
Chile	860	860	860
Indonesia	1260	738	738
Jordan	745	745	745
Malaysia	762	778	778
Paraguay	696	774	870
Peru	752	648	648
Philippines	1176	1176	1176
Russian Federation	686	686	686
Sri Lanka	1260	1260	1260
Thailand	760	652	652
Tunisia	735	548	548
Uruguay	732	712	712
Zimbabwe	975	936	936

Source: OECD 2001.



**Table 19: Number of teaching hours per year in public institutions by level of education (1996) and index of change between 1990 and 1996 (1990=100)**

	Teaching time (1996)				Index of change in teaching time between 1990 and 1996 (1990=100)		
	Primary education	Lower secondary education	Upper secondary education (general)	Upper secondary education (vocational)	Lower secondary education	Upper secondary education (general)	Upper secondary education (vocational)
Austria	684	658	623	636	101	101	101
Belgium	861	741	657	953	117	100	100
Czech Republic	635	607	580	580	m	m	m
Denmark	750	750	480	750	100	95	m
France	900	647	636	636	97	95	95
Germany	772	715	671	676	100	103	101
Greece	780	629	629	629	m	m	m
Hungary	551	473	473	473	90	m	m
Ireland	915	735	735	735	100	100	100
Italy	748	612	612	612	100	100	100
Korea	m	456	428	456	m	m	m
Netherlands	975	910	910	900	100	100	99
New Zealand	804	776	747	a	m	m	m
Norway	713	611	505	589	92	93	92
Portugal	783	644	574	574	88	90	90
Spain	900	900	630	630	100	100	100
Sweden	624	576	528	612	96	100	93
Switzerland	871	850	669	m	m	m	m
United Kingdom	800	740	m	m	100	m	m
United States	958	964	942	m	m	m	m

m = data not available

x = data included in another column/category of the table

a = data not applicable because the category does not apply

Source: OED, 1998a.

**Table 20: Teachers' reports on average size of mathematics class, 8th grade, 1999**

		Overall Average Class Size
Australia		27 (0.3)
Belgium Fl.		19 (0.4)
Bulgaria		22 (0.6)
Canada		27 (0.3)
Chile		34 (0.6)
Chinese Taipei		39 (0.5)
Cyprus	r	29 (0.2)
Czech Republic	r	24 (0.4)
Finland		19 (0.3)
Hong Kong, SAR		37 (0.5)
Hungary		21 (0.5)
Indonesia	r	21 (0.5)
Iran, Islamic Rep.		45 (0.9)
Israel	r	33 (0.5)
Italy		20 (0.3)
Japan		36 (0.2)
Jordan		36 (0.7)
Korea, Rep. of		42 (0.5)
Latvia (LSS)	r	22 (0.5)
Lithuania		23 (0.3)
Macedonia, Rep. of		28 (0.4)
Malaysia		38 (0.6)
Moldova	r	26 (0.4)
Morocco	r	33 (0.8)
Netherlands	r	25 (0.5)
New Zealand		25 (0.4)
Philippines	r	50 (0.6)
Romania		24 (0.4)
Russian Federation		24 (0.5)
Singapore		37 (0.3)
Slovak Republic		25 (0.4)
Slovenia		22 (0.3)
South Africa	r	50 (1.4)
Thailand	r	42 (0.9)
Tunisia		34 (0.4)
Turkey	s	43 (1.3)
United States	r	26 (0.7)

*Note: An "r" indicates that data for mathematics teachers are only available for 70-84 % of students. An s indicates teacher response data available for 50-69% of students. A78 appear inconsistent.*

*Source: International Association for the Evaluation of Educational Achievement (IEA)/TIMSS, 2000.*

Data for Figure 32

**Table 21: Average class size by level of education in selected countries, 1997/98 (or latest year available)**

		Pre-primary education	Primary education	Secondary education
Low-income	Egypt	36	44	40
	Ethiopia (1995/96)	40	45	
	Kenya (1995/96)	27.5	40	40
	Mozambique (1995/96)		50	43
	Sudan	25	46	57
	Tanzania, United Rep. Of	25	45	
	Zambia		37 (1994)	48 (1995)
	Viet Nam	27	32	42
Middle-income	Mauritius (1995/96)		33	33
	Jordan	24	30	
	Malaysia (1996)		33	45
	Philippines (1994/95)		40	49
	Dominican Republic (1995/96)	35	50	40
	Paraguay (1993/94)	24	22	32

Source: IBE, 1999 (in ILO, 2000a).

Data for Figure 33

**Table 22: Number of pupils by grade, 1995**

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Bangladesh	56.9	48.9	46.8	39.3	30.4	
Benin	71.3	57	54	50	44	36.5
Bhutan	26.1	27.3	27.2	30.7	32.5	29.3
Burkina Faso	72.1	67.7	70.1	59.9	54.6	56.3
Cape Verde	33.2	31.4	31.8	30.3	33.1	
Equatorial Guinea	112.3	40.3	41.2	54.8	73.4	
Ethiopia	65.4	43.5	36.1	31.5	31.4	31.9
Madagascar	33.5	25	20.2	17.5	16.4	
Maldives	24.5	23.7	24.9	25.9	23	22.1
Nepal	39.7	29.3	22	17.8		
Tanzania	40.2	40.1	38.2	38.3	36.1	35.6
Togo	67.2	52.9	45.6	36.1	37.2	32.2
Uganda	62.6	48.2	40.6	36.9	31.4	27.6
Zambia	35.9	38.1	36.4	36	36.2	33.4

Source: Schleicher et al., 1995

**Table 23: Estimated class size in lower secondary education, 1999**

	Estimated class size
<b>OECD countries</b>	
Australia	15
Austria	17
Belgium (Fl.)	12
Czech Republic	19
Denmark	16
Finland	13
France	19
Germany	20
Greece	18
Hungary	17
Ireland	19
Italy	19
Japan	21
Korea	37
Mexico	50
Netherlands	22
New Zealand	20
Norway	13
Scotland	19
Spain	19
Sweden	17
Switzerland	13
Turkey	24
United States	17
Argentina	15
Brazil	34
Chile	39
Indonesia	33
Malaysia	30
Peru	24
Philippines	50
Thailand	42
Tunisia	41
Uruguay	22

Source: Calculated from OECD 2001 and UNESCO/OECD 2001.

Data for figures 35, 36 and 37

**Table 24: Annual starting, mid-career and maximum statutory teachers' salaries in primary, lower secondary and upper secondary education (in equivalent US\$ converted using PPPs), 1999**

	Primary education			Lower secondary education			Upper secondary education		
	Starting salary /minimum training	Salary after 15 years' experience /minimum training	Salary at top of scale /minimum training	Starting salary /minimum training	Salary after 15 years' experience /minimum training	Salary at top of scale /minimum training	Starting salary /minimum training	Salary after 15 years' experience /minimum training	Salary at top of scale /minimum training
<b>OECD countries</b>									
Australia	25661	36971	37502	26658	37138	37577	26658	37138	37577
Austria	21804	26389	44159	22421	27503	46735	24027	30376	53443
Belgium (Fl.)	22901	30801	36594	23428	32819	40017	29075	41977	50461
Belgium (Fr.)	22043	29878	35685	22561	31903	39115	28151	41079	49581
Czech Republic	6806	9032	12103	6806	9032	12103	8052	10695	14316
Denmark	28140	32684	32684	28140	32684	32684	29986	40019	42672
England	19999	33540	33540	19999	33540	33540	19999	33540	33540
Finland	18110	24799	25615	20394	28225	29530	21047	29530	31325
France	19761	26599	39271	21918	28757	41537	21918	28757	41537
Germany	29697	36046	38996	33196	38596	43945	35546	41745	49445
Greece	19327	23619	28027	19650	23943	28987	19650	23943	28987
Hungary	5763	8252	11105	5763	8252	11105	6908	10355	13217
Iceland	19939	21891	25377	19939	21891	25377	20775	25795	30954
Ireland	21940	35561	40141	23033	35944	40523	23033	35944	40523
Italy	19188	23137	28038	20822	25397	31062	20822	26175	32602
Korea	23759	39411	62281	23613	39265	62135	23613	39265	62135
Mexico	10465	13294	22345	13357	15592	27643	m	m	m
Netherlands	25896	30881	37381	26874	33056	41066	27133	46148	54720
New Zealand	16678	32573	32573	16678	32573	32573	16678	32573	32573
Norway	22194	25854	27453	22194	25854	27453	22194	25854	27453
Portugal	18751	27465	50061	18751	27465	50061	18751	27465	50061
Scotland	19765	32858	32858	19765	32858	32858	19765	32858	32858
Spain	24464	28614	37317	26669	31178	40082	29058	33988	43100
Sweden	18581	24364	m	18704	24487	m	20549	26210	m
Switzerland	33209	43627	51813	39162	52247	60615	46866	62052	70548
Turkey	9116	10327	11541	8144	9355	10568	8144	9355	10568
United States	25707	34705	43094	25155	33418	44397	25405	36219	44394
<b>Country mean</b>	<b>20358</b>	<b>27525</b>	<b>33752</b>	<b>21252</b>	<b>28629</b>	<b>35511</b>	<b>22839</b>	<b>31887</b>	<b>39144</b>
<b>WEI participants*</b>									
Argentina	9 857	13 327	15 647	15 789	22 266	26 759	15 789	22 266	26 759
Brazil	4 818	7 191	10 877	11 970	11 180	13 954	12 598	16 103	18 556
Chile	14 459	15 868	19 435	14 459	15 868	19 435	14 644	16 214	19 597
Indonesia	1 624	2 938	5 598	1 624	2 938	5 598	1 689	3 537	5 598
Jordan	8 096	10 652	27 347	8 096	10 652	27 347	8 096	10 652	27 347
Malaysia	7 056	11 803	17 001	13 575	21 568	29 822	13 575	21 568	29 822
Peru	4 752	4 752	4 752	4 701	4 701	4 701	4 701	4 701	4 701
Philippines	12 620	13 715	14 609	12 620	13 715	14 609	12 620	13 715	14 609
Thailand	5 781	14 208	27 098	5 781	14 208	27 098	5 781	14 208	27 098
Tunisia	11 706	12 877	13 449	15 062	16 467	17 169	18 235	19 770	20 577
Uruguay	9 842	11 675	14 724	9 842	11 675	14 724	10 305	12 489	15 585

\* Teacher salaries for WEI participants include all additional bonuses (see OECD/UNESCO, 2001)

Source: OECD, 2001 and OECD/UNESCO, 2001

**Table 25: Ratio of salary after 15 years' experience in primary and lower secondary education, 1999 and 1994**

	Primary education		Lower secondary education	
	Ratio of salary after 15 years' experience to GDP per capita (1999)	Ratio of salary after 15 years' experience to GDP per capita (1994)	Ratio of salary after 15 years' experience to GDP per capita (1999)	Ratio of salary after 15 years' experience to GDP per capita (1994)
<b>OECD countries</b>				
Australia	1.50	m	1.50	m
Austria	1.06	1.16	1.10	1.26
Belgium (Fl.)	1.25	1.28	1.34	1.37
Belgium (Fr.)	1.22	1.28	1.30	1.37
Czech Republic	0.69	m	0.69	m
Denmark	1.24	1.40	1.24	1.40
England	1.50	m	1.50	m
Finland	1.08	1.29	1.23	1.41
France	1.19	1.26	1.28	1.39
Germany	1.53	1.65	1.63	1.80
Greece	1.58	1.27	1.60	1.27
Hungary	0.72	m	0.72	m
Iceland	0.82	m	0.82	m
Ireland	1.38	2.11	1.39	2.23
Italy	1.04	1.10	1.15	1.19
Korea	2.51	m	2.50	m
Mexico	1.52	m	1.78	m
Netherlands	1.23	1.38	1.31	1.49
Norway	0.91	1.00	0.91	1.00
New Zealand	1.78	1.27	1.78	1.32
Portugal	1.65	1.97	1.65	2.44
Scotland	1.47	m	1.47	m
Spain	1.56	1.95	1.70	1.95
Sweden	1.07	1.05	1.07	1.15
Switzerland	1.57	1.65	1.88	1.98
Turkey	1.37	1.65	1.24	1.36
United States	1.03	1.22	0.99	1.18
<b>Country mean</b>	<b>1.32</b>	<b>1.42</b>	<b>1.36</b>	<b>1.50</b>
<b>WEI participants</b>				
Argentina	1.16	m	1.93	m
Brazil	1.10	m	1.71	m
Chile	1.84	m	1.84	m
Indonesia	1.12	m	1.12	m
Jordan	2.87	m	2.87	m
Malaysia	1.46	m	2.68	m
Peru	1.05	m	1.04	m
Philippines	3.83	m	3.83	m
Thailand	2.47	m	2.47	m
Tunisia	2.25	m	2.87	m
Uruguay	1.39	m	1.39	m

Source: OECD 2001

Data for figure 38

**Table 26a: Real salary index for secondary teachers in selected countries, 1990-1998 (1990=100)**

				1990	1994	1995	1996	1997	1998
High-income countries	Bermuda		Min	100.0	102.2	123.1	127.8	128.8	
	Cyprus	Languages and Math	M	100	110.4	105.7	104.9	109.3	
			F	100	110.6	102.3	101.1	104.8	
		Technical	M	100	110.4	105.7			
			F	100	110.6	102.3			
	Finland	Languages and Math	M	100	92.7	107.4			
			F	100	90.6	103.2			
		Mathematics	M	100	86.7	100.4			
			F	100	85	96.8			
		Technical	M	100	105.7	115.1			
			F	100	105.3	111.3			
	Italy	Languages and Math		100	94.4	91	92.5	97.4	95.6
		Technical		100	94.4	91	92.5	97.1	95.4
Upper-middle income countries	Barbados		Min	100	90.2	88.1			
			Max	100	90.3	88.1			
	Bahrain		M	100	102.9	101.9	89.5		98.1
			F	100	101.4	100.8	79.9		88.1
	Korea Rep. Of			100	143.6			156.5	
	Mauritius	Languages and Math		100		191.9	192.8	173.4	183.8
				100		223.4	212.8	201.8	213.9
	Venezuela			100					65
Lower-middle income countries	Belize		Min	100	89.5	86.9			
			Max	100	93.5	90.9			
	El Salvador			100		107.6		117.7	
	Philippines			100	90.9	104.6			
	Thailand		M	100	126.2	137.9			
			F	100	127.6	128.6			
Low-income countries	Central African Rep.	Languages and Math		100		58.5	56.3	62.5	
		Technical		100		65.9	67.3	74.7	
	Tchad		M	100			81	76.6	85.2
	Honduras	Languages	M	100		50.3		73	
			F	100	139.2	111.4		112.1	
		Mathematics	F	100	61.1	59.6		59.2	
		Technical	M	100	59.4	67.3		130.1	
	Myanmar	Languages and Math		100	47.6	38.9	33.5	26.40	
		Technical		100	47.8	39	33.5	26.40	

Source: ILO, 2000a.

**Table 26b: Real salary index for Languages and Mathematics secondary teachers in selected countries, 1990-1998 (or latest year available) (1990=100)**

High-income countries	Bermuda	128.8
	Cyprus	109.3
	Finland	107.4
	Italy	95.6
	Singapore	161.2
Upper middle-income countries	Barbados	88.1
	Bahrain	89.5
	Korea Rep. of	156.5
	Mauritius	183.80
	Venezuela	65
Lower middle-income countries	Belize	86.9
	El Salvador	117.7
	Philippines	104.6
	Thailand	137.9
Low-income countries	Central African Rep.	62.5
	Tchad	85.2
	Honduras	73
	Myanmar	26.4

Note: The figure for Languages teachers was used when countries reported different figures for Languages and Mathematics teachers. The figure for male teachers was used when countries reported different figures for male and female teachers. The figure for minimum salary was used when countries reported minimum and maximum figures.

Source: ILO, 2000a.



Data for Figure 39

**Table 27: Statutory teachers' salaries after 15 years' experience relative to GDP per capita by level of education, 1999**

	Primary education	Lower secondary education	Upper secondary education (general programmes)
<b>OECD countries</b>			
Australia	1.50	1.50	1.50
Austria	1.06	1.10	1.22
Belgium (Fl.)	1.25	1.34	1.71
Belgium (Fr.)	1.22	1.30	1.67
Czech Republic	0.69	0.69	0.82
Denmark	1.24	1.24	1.52
England	1.50	1.50	1.50
Finland	1.08	1.23	1.29
France	1.19	1.28	1.28
Germany	1.53	1.63	1.77
Greece	1.58	1.60	1.60
Hungary	0.72	0.72	0.90
Iceland	0.82	0.82	0.97
Ireland	1.38	1.39	1.39
Italy	1.04	1.15	1.18
Korea	2.51	2.50	2.50
Mexico	1.52	1.78	m
Netherlands	1.23	1.31	1.83
Norway	0.91	0.91	0.91
New Zealand	1.78	1.78	1.78
Portugal	1.65	1.65	1.65
Scotland	1.47	1.47	1.47
Spain	1.56	1.70	1.85
Sweden	1.07	1.07	1.15
Switzerland	1.57	1.88	2.23
Turkey	1.37	1.24	1.24
United States	1.03	0.99	1.07
<b>Country mean</b>	<b>1.32</b>	<b>1.36</b>	<b>1.46</b>
<b>WEI participants</b>			
Argentina	1.16	1.93	1.93
Brazil	1.10	1.71	2.47
Chile	1.84	1.84	1.88
Indonesia	1.12	1.12	1.35
Jordan	2.87	2.87	2.87
Malaysia	1.46	2.68	2.68
Peru	1.05	1.04	1.04
Philippines	3.83	3.83	3.83
Thailand	2.47	2.47	2.47
Tunisia	2.25	2.87	3.45
Uruguay	1.39	1.39	1.48

Source: OECD, 2001

Data for Figure 40

Table 28: Decomposition of the difference between teachers' statutory salary cost per student in each country and the average teachers' statutory salary cost per student over all countries, lower secondary education, 1999

Raw Data		Country observations					Calculation of costs if all factors are at WEI average, except:					Difference from country mean due to:						
	Statutory salary after 15 years' experience	Student/teaching staff ratio	Annual students' instruction hours	Annual teachers' teaching hours	Class Size	Statutory salary with 15 years of experience	Students' hours of instruction	Teachers' teaching hours	Class size	Two or more factors jointly considered	Country cost per student	Level of statutory salary (15 years of experience)	Students hours of instruction	Teachers' teaching hours	Class size	Interaction	sum diff	real diff
A	B	C	D	E=(C*B)/D	a*(C/D)/E	A*(C/D)/E	A*(C/D)/E	A*(C/D)/E	A*(C/D)/e	a*(C/D)/e or a/b	1342							
Country average	24172	18	988	739	24													
OECD countries																		
Australia	37138	14	1015	955	15	2062	1379	1039	2213	1379	2703	720	36	-303	871	37	1324	1361
Austria	27503	10	1136	658	17	1527	1543	1507	1946	1703	2857	185	200	165	604	361	1154	1515
Czech Republic	9032	16	837	709	19	502	1137	1399	1691	1198	558	-841	-205	57	349	-144	-784	-784
Denmark	32684	12	890	644	16	1815	1209	1541	2013	1605	2814	473	-133	198	671	263	1209	1472
Finland	28225	11	798	656	13	1567	1084	1514	2505	1363	2684	225	-258	171	1163	21	1301	1322
France	28757	13	933	634	19	1597	1267	1565	1706	1468	2234	255	-75	223	364	126	766	892
Germany	38596	16	902	733	20	2143	1225	1354	1596	1397	2346	801	-117	11	254	55	949	1004
Greece	23943	11	1036	629	18	1330	1407	1577	1844	1461	2251	-13	65	235	502	119	789	908
Hungary	8252	11	861	555	17	458	1170	1788	1909	800	757	-884	-172	445	567	-542	-44	-585
Ireland	35944	15	935	735	19	1996	1270	1350	1739	1475	2462	654	-72	8	397	133	986	1120
Italy	25397	10	1105	612	19	1410	1501	1621	1741	1566	2471	68	159	279	399	224	905	1129
Japan	41201	17	875	700	21	2288	1189	1417	1510	1372	2407	946	-154	75	168	30	1035	1064
Korea	39265	22	867	507	37	2180	1178	1957	864	986	1796	838	-165	615	-478	-357	810	454
Mexico	15592	35	1167	832	50	866	1585	1193	649	1516	439	-476	243	-150	-693	174	-1077	-903
Netherlands	33056	18	1067	868	22	1836	1449	1143	1486	1323	1868	493	107	-199	143	-19	544	525
New Zealand	32573	20	960	930	20	1809	1304	1067	1583	1253	1647	467	-39	-275	241	-89	393	305
Norway	25854	10	827	633	13	1436	1123	1567	2450	1353	2560	93	-220	225	1108	11	1207	1218
Scotland	32858	17	1000	893	19	1825	1358	1111	1658	1305	1888	482	16	-231	316	-37	583	546
Spain	31178	13	845	561	19	1731	1147	1769	1664	1475	2417	389	-195	426	321	133	942	1075
Sweden	24487	13	741	576	17	1360	1006	1723	1895	1232	1846	17	-336	380	552	-110	614	504
Switzerland	52247	12	944	859	13	2901	1282	1155	2428	1917	4315	1559	-60	-187	1086	575	2398	2973
United States	33418	17	960	964	17	1856	1331	1029	1698	1250	1995	513	-11	-313	556	-92	745	652
WEI participants																		
Argentina	20903	16	896	900	15	1161	1217	1102	2093	1144	1348	-182	-125	-240	750	-198	204	5
Brazil	11180	34	800	800	34	621	1087	1240	958	1795	332	-721	-256	-102	-384	452	-1463	-1011
Chile	10476	33	1000	860	39	582	1358	1154	831	1757	313	-761	16	-188	-512	415	-1444	-1029
Indonesia	1836	20	1231	738	33	102	1672	1344	980	1364	93	-1240	330	2	-363	22	-1271	-1249
Malaysia	20076	19	1189	778	30	1115	1615	1276	1095	1308	1040	-227	273	-67	-247	-34	-268	-302
Peru	4235	17	903	648	24	235	1227	1531	1346	1276	246	-1107	-116	189	4	-67	-1030	-1096
Philippines	10640	40	1467	1176	50	591	1992	844	651	1559	267	-751	650	-499	-691	216	-1291	-1075
Thailand	14208	24	1167	652	42	789	1585	1523	768	1309	605	-553	243	180	-574	-33	-705	-738
Tunisia	16467	26	880	548	41	914	1195	1811	780	1307	468	-428	-147	468	-562	-35	-669	-704
Uruguay	6281	12	1369	712	22	349	1860	1394	1440	865	538	-993	517	51	98	-477	-327	-804

Sources: OECD 2001 and OECD/UNESCO 2001 (for teacher salary data of WEI countries and statistical method applied for the decomposition).  
For all WEI countries, the year of reference of the data on teacher salaries is 1998.