

# Teachers for Tomorrow's Schools

ANALYSIS OF THE WORLD EDUCATION INDICATORS  
2001 EDITION

## *EXECUTIVE SUMMARY*





**TEACHERS FOR  
TOMORROW'S SCHOOLS**

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT  
UNESCO INSTITUTE FOR STATISTICS  
WORLD EDUCATION INDICATORS PROGRAMME

## **ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT**

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

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

The original Member countries of the OECD are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The following countries became Members subsequently through accession at the dates indicated hereafter: Japan (28<sup>th</sup> April 1964), Finland (28<sup>th</sup> January 1969), Australia (7<sup>th</sup> June 1971), New Zealand (29<sup>th</sup> May 1973),

Mexico (18<sup>th</sup> May 1994), the Czech Republic (21<sup>st</sup> December 1995), Hungary (7<sup>th</sup> May 1996), Poland (22<sup>nd</sup> November 1996), Korea (12<sup>th</sup> December 1996), and the Slovak Republic (14<sup>th</sup> December 2000).

The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention).

The constitution of the **UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION (UNESCO)** was adopted by 20 countries at the London Conference, in November 1945, and entered into effect on 4<sup>th</sup> November 1946. The Organization has currently 188 Member States.

The main objective of UNESCO is to contribute to peace and security in the world by promoting collaboration among nations through education, science, culture and communication in order to foster universal respect for justice, for the rule of law, for the human rights and fundamental freedoms which are affirmed for the peoples of the world, without distinction of race, sex, language or religion, by the Charter of the United Nations.

To fulfil its mandate, UNESCO performs five principal functions:

- Prospective Studies on education, science, culture and communication for tomorrow's world.
- The advancement, transfer and sharing of knowledge through research, training and teaching activities.
- Standard-setting actions for the preparation and adoption of international instruments and statutory recommendations.
- Expertise through technical co-operation to Member States, for their development policies and projects.
- Exchange of specialized information.

The **UNESCO Institute for Statistics (UIS)** is the statistical office of UNESCO and is the UN depository for global statistics in the fields of education, science and technology, culture and communication.

The Institute for Statistics was established in 1999. It was created to improve UNESCO's statistical programme and to develop and deliver the timely, accurate and policy-relevant statistics needed in today's increasingly complex and rapidly changing environment.

Currently based in UNESCO Headquarters in Paris (France), the UIS will be permanently located in Montreal (Canada) from September 2001.

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The 1990s have witnessed growing demand for learning throughout the world. Compelling incentives for individuals, economies and societies to raise the level of education have been the driving force behind increased participation in a widening range of learning activities by people of all ages. The challenge is now how best to meet rising demand while ensuring that the nature and types of learning respond to needs in a cost effective manner. There is an increasing recognition that teachers play the central role in efforts aimed at improving the functioning of education systems and raising learning outcomes. But do government policies consistently reflect this awareness? Does what is demanded of existing and prospective teachers match what is offered to them in terms of economic incentives and career prospects?

*Teachers for Tomorrow's Schools* is the second in a series of publications that seek to analyse the education indicators developed through the OECD/UNESCO World Education Indicators (WEI) programme. The volume examines trends in educational finance and governance, with particular attention to how they relate to teachers and teaching conditions; reviews patterns of access and participation in education systems to signal changes in the demand for teachers; compares what is demanded of existing and prospective teachers in terms of qualifications and workload with existing financial and other job-related incentives; and reviews the policy choices and trade-offs that governments face when balancing expanded access to education against the need to attract and retain good teachers. A statistical profile of important determinants of the demand and supply of qualified teachers together with a comprehensive statistical annex covering both WEI and OECD countries complements the analysis.

Countries participating in the OECD/UNESCO WEI programme: Argentina, Brazil, Chile, China, Egypt, India, Indonesia, Jordan, Malaysia, Paraguay, Peru, the Philippines, the Russian Federation, Sri Lanka, Thailand, Tunisia, Uruguay and Zimbabwe.

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## EXECUTIVE SUMMARY

Education and training play a crucial role in helping individuals and societies to adapt to profound social, economic and cultural change, and foster the development of the human capital needed for economic growth. The ability of education and training systems to fulfil these roles depends on whether educational institutions themselves respond to change, and on whether teachers develop and deliver educational content in ways that meet the needs of today's and tomorrow's citizens.

Policy-makers and society at large have high expectations of teachers as professionals, role models and community leaders. Teachers are asked to manage the far-reaching changes that are taking place in and outside schools and to implement the complex reforms of education systems that are under way in countries participating in the OECD/UNESCO World Education Indicators Programme (WEI).

Educational policy-makers face a difficult balancing act in managing teacher deployment effectively and efficiently. They need to ensure that the investment made in teachers is sufficient and proportionate to the demands placed upon them. This means both that the qualifications of the teaching force must be adequate and that the salaries and working conditions of teachers must be sufficiently competitive to attract and retain people with the desired qualifications into the teaching profession.

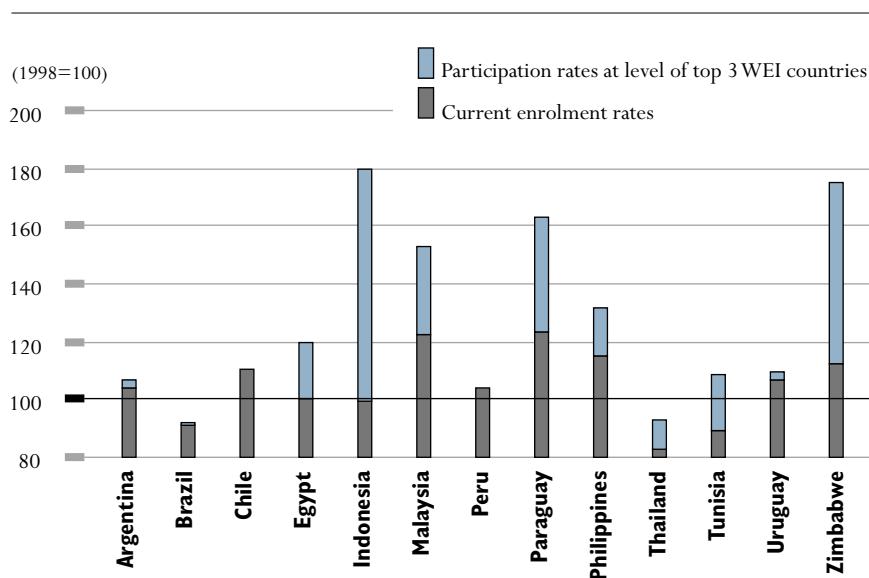
### ■ ***RISING DEMAND FOR EDUCATION AND TEACHERS***

Rising enrolment rates, in some cases combined with an expanding school-age population, are increasing the demand for new teachers in many WEI countries, notably in those with the lowest levels of economic development.

In the majority of WEI countries, the population of primary-school age has stopped growing or even started to decline. On the other hand, unlike the situation in most OECD countries, where the population at the age of secondary and tertiary education has tended to decline, the number of individuals beyond primary-school age is still growing in most WEI countries. The slowdown in population growth, which began in the 1970s in most countries, will still take many years to translate into fewer children at secondary and tertiary levels. Moreover, while most WEI countries have achieved or are close to achieving universal enrolment in primary education, enrolment rates for the population of secondary-school age vary widely, ranging from 87 per cent in Chile to 48 per cent in Indonesia.

These changes in student numbers will have significant implications not only for teacher training and recruitment but also for the financial resources

Figure 1  
 Estimated change in the demand for teachers due to changes in the population  
 of secondary-school age under different enrolment scenarios, 1998-2010



Source: OECD/UNESCO WEI, Table 37 in Annex A4.

which countries need to invest in education if they are to achieve universal education for all children of primary-school age and to increase, or merely to maintain, current enrolment rates in secondary education.

And yet, despite an increasing population of secondary-school age, the next few decades will provide a unique window of opportunity for many WEI countries to improve the quality of educational services. Because of the relative decline in the size of the cohorts of primary-school age, the proportion of people of working age will grow faster over the next few decades than that of children in many WEI countries. As a result, countries will be in a better position to mobilise resources for public services, including education, and should find it easier to fund their education systems. Policy-makers can use this opportunity to shift the focus from expanding the coverage of the education system to improving the quality of educational provision and outcomes, including reducing the high proportion of over-age students, repeaters and late entrants enrolled in primary education which is still found in certain WEI countries.

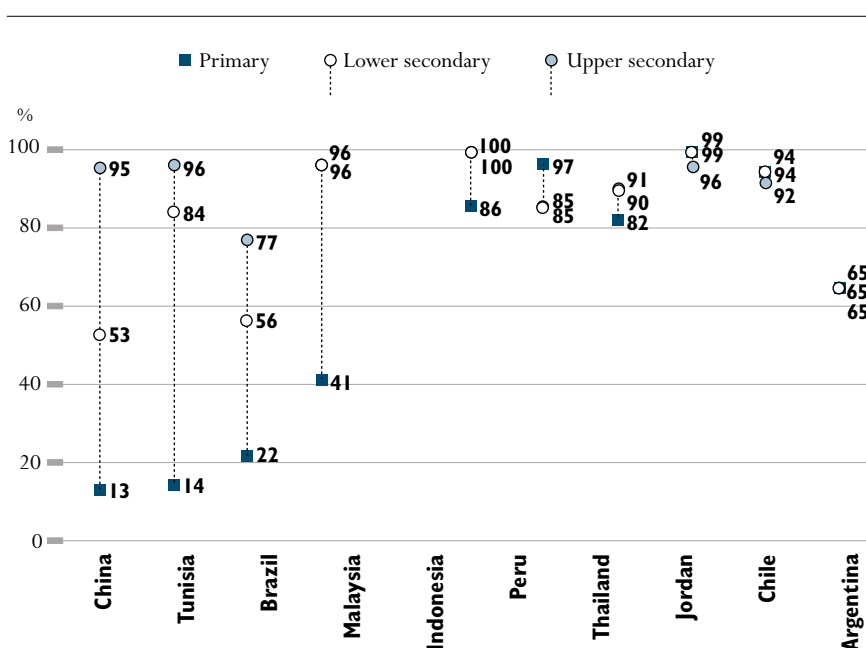
The ability to meet demand at secondary and tertiary levels has been constrained in some countries by the capacity of the teaching force. Teachers and non-teaching staff account for a sizable percentage of national labour resources. In most WEI countries, at least one in twenty-five of all employed persons work in the education system. In Tunisia, this ratio is even

higher – one in ten. Moreover, teachers are often among the most educated workers: in Indonesia, more than half of those members of the labour force who have a tertiary qualification are in the education sector.

The proportion of the teaching force meeting national qualification standards differs markedly between WEI countries. Six WEI countries have more or less reached the standard of requiring tertiary qualifications for teaching in primary, lower and upper secondary education. The lowest proportions of teachers with tertiary qualifications are found in Brazil, China and Tunisia. The first two of these countries also have the lowest percentages at the lower secondary level. The situation in Tunisia, where only 14 per cent of teachers at the primary level have a tertiary qualification, contrasts sharply with that in Jordan, where almost all primary teachers have such a qualification. Data from a recent international assessment show nonetheless that there is still sizable demand for qualified mathematics and science teachers in secondary education in both countries.

A better-trained teaching force is an important factor in educational quality and efficiency, but there are also organisational considerations. Policies that give more children access to educational opportunities, such as larger classes and multiple-shift schooling, are common in many WEI countries but may place additional burdens on teachers. These practices are closely connected to

Figure 2  
Share of teachers with tertiary-level qualifications, 1998  
(in percentages)



Countries are ranked by the difference between primary and upper secondary values.

Source: OECD/UNESCO WEI.



the issue of repetition: in Brazil, Paraguay, the Philippines and Zimbabwe, between 30 and 50 per cent of pupils of secondary-school age are enrolled in primary school as repeaters or late entrants. In such situations, teachers face greater difficulties in managing classrooms and delivering curricula.

### ■ **RESOURCE LEVELS FOR EDUCATION AND HOW MONEY IS SPENT**

In order to meet the goals of expanding educational opportunities and improving quality, additional resources will be needed. Furthermore, this report recognises that sustainable strategies for the deployment of teachers require a stable flow of resources, since unexpected declines in the level of financial support will make it difficult, if not impossible, to adhere to the strategies adopted. Rapid macro-economic changes in the global and national economies mean that strategies must also have the flexibility to respond quickly, yet in a considered manner.

However, WEI countries are limited in what they can spend on education by shrinking public budgets, except in those few instances where the economy, and hence public budgets, have expanded. Governments are therefore forced to take decisions on which aims can realistically be achieved in the light of the resources available.

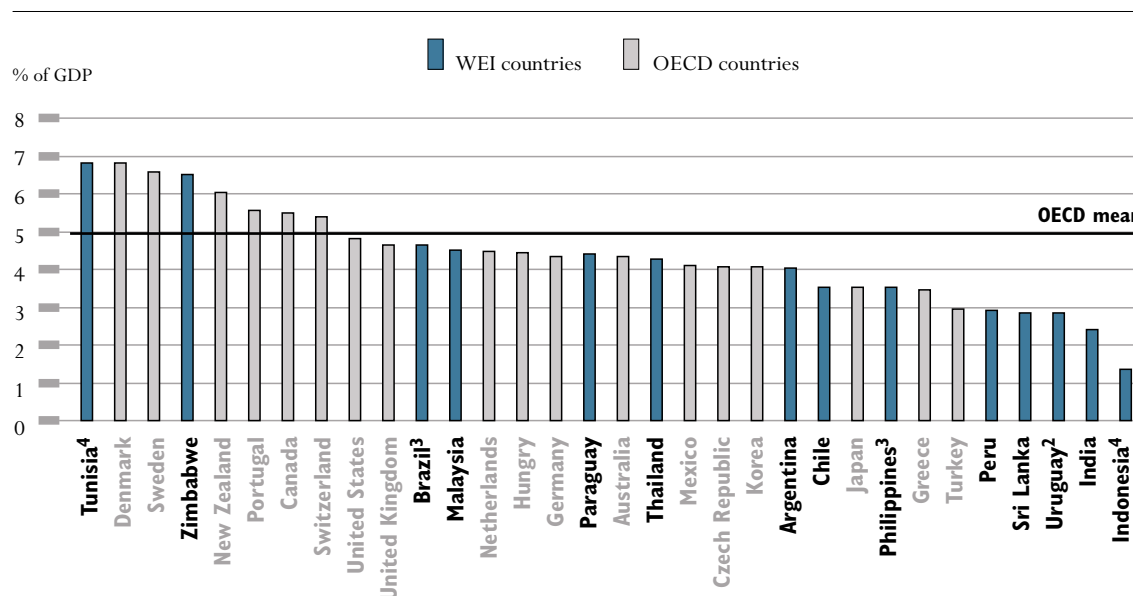
Countries that faced an economic crisis in the 1990s must meet the double challenge of building sustainable educational reform in an unstable macro-economic environment. Some WEI countries have had to respond to diminished public resources by redistributing public funding between levels of education and categories of expenditure. In the Russian Federation and Southeast Asia, the proportion of spending on teachers has remained relatively stable, while the amount available for spending on other types of educational needs has fallen. Experience in these countries also suggests that in economic downturns, greater pressure is placed on households to make private contributions to the costs of education.

This raises the more general question of who should pay for the expansion of educational opportunities. The funding of a national education system should be equitably distributed across the population. Private expenditure plays an important role in financing secondary and tertiary education in most WEI countries. In a number of countries, parents and communities help to cover costs by directly or indirectly subsidising teachers' salaries in state-run schools, or by directly employing and paying teachers. The extent of private funding of education reaches striking levels in some countries, however, accounting for more than 40 per cent of total educational expenditure in Chile, Peru, the Philippines and Thailand. These figures are well above the OECD mean of 19 per cent. In Egypt, Jordan and Tunisia, on the other hand, private expenditure is lower, since there are few private providers.

In the quest for solutions to the issue of funding, it should be borne in mind that one of the main goals of a national education system is to make the benefits of education accessible to all. Several WEI countries have made special efforts to this end, most notably Brazil, where indicators show that progress was made in the second half of the 1990s in widening educational access in the impoverished Northeastern region. However, while access to education has improved, enormous gaps between Brazilian regions remain in educational quality, as measured by the availability of qualified teachers, adequate infrastructure and other indicators of teaching conditions.

Investing in the educational process also means providing enabling environments for teachers and students. Well-qualified and motivated teachers are a necessary but not a sufficient condition for good learning outcomes, and adequate investment in teaching materials and school infrastructure is also required. According to data from an 1999 international assessment, a large proportion of 8<sup>th</sup>-grade students were affected by shortages of teaching materials and poorly equipped or poorly maintained schools. For example, over 80 per cent of students in the Russian Federation, Thailand and Tunisia

Figure 3  
Public expenditure<sup>1</sup> on educational institutions as a percentage of GDP, 1998



1. Including public subsidies to households attributable for educational institutions. Including direct expenditure on educational institutions from international sources.
2. Direct expenditure on educational institutions from international sources exceed 1.5% of all public expenditure (1998).
3. Year of reference 1997.
4. Year of reference 1999.

Source: OECD/UNESCO WEI, Table 4 in Annex A4.

were in schools that reported ‘a lot’ of problems with the availability of teaching materials. An essential part of ensuring good learning outcomes is providing teachers with the tools needed to deliver the curriculum.

### ■ *WHAT TEACHERS ARE ASKED AND WHAT THEY ARE GIVEN*

Expectations of teachers are high. They need to be experts in one or more specific subjects, and this demands an increasing level of academic qualifications. They must continually update their expertise and knowledge since, in order to provide tomorrow’s world with the knowledge and skills on which economic and social progress so critically depends, educational institutions and teachers need to respond by developing and delivering appropriate educational content. Moreover, teachers’ subject-matter expertise must be complemented by pedagogical competence, with a focus on the transmission of a range of high-level skills, including the motivation to learn, creativity and co-operation. In some WEI countries, technology is becoming a new feature of professionalism in teaching, requiring an understanding of the pedagogical potential of technology and the ability to integrate it into the teaching-learning process. Finally, professionalism in teaching can no longer be seen as an individual competence, but must include the ability to function as part of a “learning organisation” and the capacity and willingness to move in and out of other careers and experiences that can enrich teaching ability.

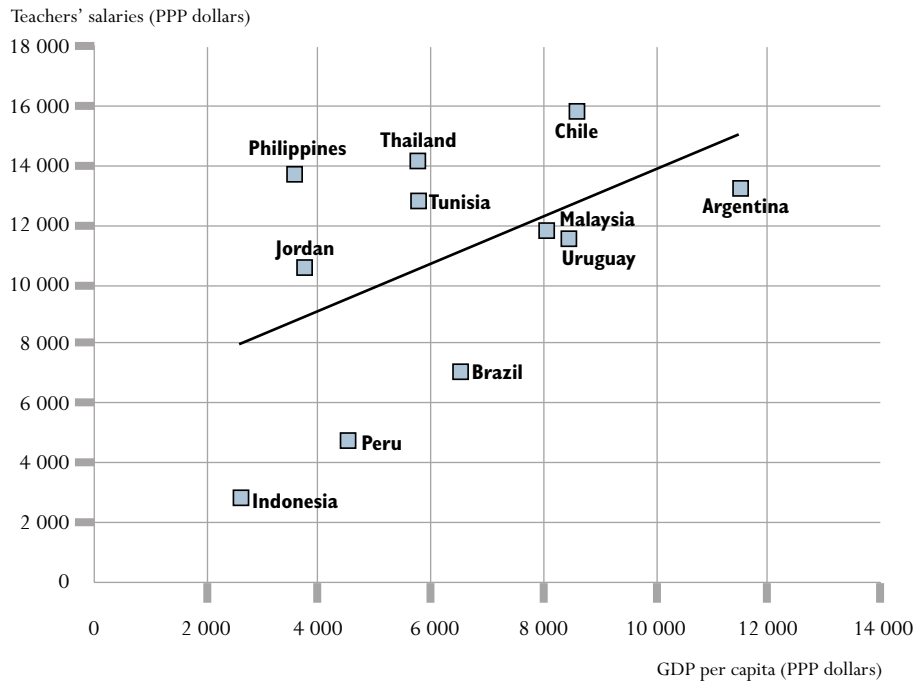
The global trend towards moving decision-making in education to lower levels of government also affects teachers in the WEI countries in several ways: first, by bringing decisions about teachers (aside from statutory salary scales) closer to the locality and the school and, second, by asking teachers to play a greater role in managing the system. Some countries have adopted a model in which schools operate within a centrally determined framework of curricula and standards, but are given a considerable amount of autonomy and responsibility for decisions.

The demands placed on teachers are therefore considerable. The balance between what is required of teachers and what is offered to them has a significant impact on the composition of the teaching force and the quality of teaching. Attracting skilled individuals and retaining them in the teaching profession is an essential prerequisite for ensuring high-quality education in the future.

This report considers the challenges posed by the need to secure a skilled and motivated teaching force, and examines some of the policy choices and trade-offs that countries make when balancing expanded access to education with the need to attract and retain good teachers.

The relative level of teachers’ salaries and the availability of salary increases during the course of teachers’ careers can affect the decision by qualified

Figure 4  
 Mid-career salaries for primary teachers (including all bonuses)  
 relative to GDP per capita, 1999



Source: OECD/UNESCO WEI, Tables 1 & 25a in Annex A4.

individuals to enter or to remain in the teaching profession. At the same time, the pressure to improve the quality of education is often subject to tight fiscal constraints, and teachers' salaries and allowances are the largest single factor in the cost of providing education, accounting for two-thirds or more of public expenditure on education in most countries. The impact of various elements of the total compensation package varies from country to country, and within a given country, over time. If the compensation package is too generous there will be a surplus of qualified applicants for the profession. In addition, teaching is sometimes one of the few occupations in developing countries available to individuals with a high level of education. In such cases, there is no effective market alternative, and even low levels of compensation will attract qualified applicants. As other areas of the economy begin to develop, however, there is likely to be a sudden exodus of the best-qualified teachers from teaching into more attractive new positions.

While uniform salary scales are transparent and simple to administer, they do not help to motivate teachers to perform at their best, nor do they help to solve problems of shortages of teachers in certain subjects or in rural areas. Among the policy options that many WEI countries have not yet fully exploited are bonuses as a means of adjusting the remuneration of teachers

without altering the basic government scales. Such adjustments may serve different aims, such as rewarding teachers who take on responsibilities or duties beyond statutory norms, attracting better candidates to the teaching profession, encouraging teachers to improve their performance, or attracting teachers into subject areas where demand is greater than supply, for example science and mathematics, or to rural locations where there is a scarcity of applicants.

The payment of bonuses has to be weighed carefully, however, and their impact evaluated from case to case since there is evidence that they may elicit responses from teachers that have an effect opposite to that which is intended, impairing school effectiveness and hence student achievement. The examples of pay schemes discussed in this report show nonetheless that bonus schemes can be effective.

Material incentives for teachers are not the only factors of significance in attempts to improve the quality of education. This report examines other important indicators of the working conditions of teachers, including hours of teaching and instruction, class size and student-teacher ratios. If the working conditions for the teaching force and their associated costs are to be judged accurately, all of these indicators need to be considered in combination rather than in isolation. Together, they can help to show whether teachers are being asked to do too much or too little, and whether trade-offs are well balanced. An unbalanced system may lead to poor morale among teachers, difficulties in recruiting qualified staff, and an exodus from the profession. It may also reflect a less efficient teaching process, leading to higher costs of teaching. A balanced system contributes to more effective teaching and hence to better learning outcomes.

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 for students.

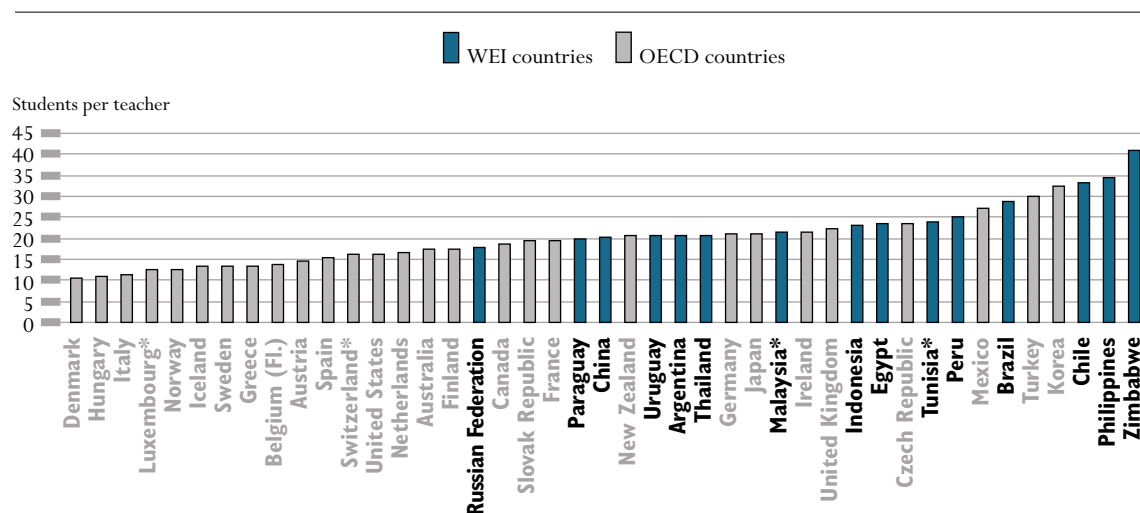
Some countries seek to increase the competitiveness of teachers' salaries and/or to raise enrolment levels by increasing student-teacher ratios, sometimes in combination with the introduction of new teaching technologies. However, while this may be a viable option for improving the effectiveness of education systems in some WEI countries, student-teacher ratios already exceed 40 students per full-time equivalent teacher in others, where it will be difficult to respond to the increased demand for teachers by raising the ratio further without risking a deterioration in the quality of educational provision.

This report shows that countries make differing policy choices about these trade-offs. 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 light teaching load, increasing the salary costs per student. In Chile, the Philippines and Thailand, comparatively high statutory salaries for primary teachers are compensated by a high number of teaching hours or larger than average classes, while in Indonesia, low salaries and a high number of teaching hours are partially offset by smaller classes. Uruguay, on the other hand, combines small primary-level classes with a low number of hours of instruction and high salaries.

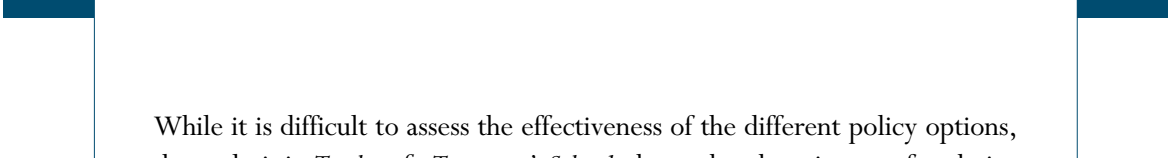
These examples illustrate that there are a various approaches for managing teacher deployment. The question of which approach is better may be a natural one, but not entirely appropriate. Each education system is a working system, which to a greater or lesser degree has satisfied the requirements of its society. The different policy choices discussed in this report represent a long history of decisions taken nationally and are subject to a certain inertia that makes it difficult to introduce substantial changes overnight, if for no other reason than that some features of the system are subject to negotiation in the framework of collective bargaining agreements. The success of a approach may also depend on less quantifiable characteristics of the education system, such as the teaching methods used or the extent of remedial help available. The interplay between, for example, class size and teaching methods is far from clear. Small classes may mean that more attention to individual students is possible, but in the absence of curriculum reform or of a change in teaching practices, for example, the expected benefits may not be forthcoming.

Figure 5  
Pupil-teacher ratio at the primary level of education, 1999  
*Calculations based on full-time equivalents*



\* Public institutions only.

Source: OECD/UNESCO WEI, Table 21 in Annex A4.



While it is difficult to assess the effectiveness of the different policy options, the analysis in *Teachers for Tomorrow's Schools* shows that there is room for choice and that international comparative analysis can be a useful instrument for informing the debate. Future research is needed to elaborate the potential impacts of the different strategies adopted by countries. It needs to identify countries that ask too much or too little of teachers, or give too much or too little to teachers in return. More information is needed about how teachers themselves perceive their profession and its demands and incentives, particularly at the classroom level. Proposed changes in the levels of resources invested, in the management of teachers, or in teaching and learning conditions, need to be seen in the context of overall public policy, which governs the complex relationship between teacher deployment, the internal efficiency of the education system, and learning outcomes. More extensive micro-level data, especially more comprehensive and reliable measures of student achievement, are required in order to understand this relationship. The provision of such data remains one of the most important future objectives for the OECD/UNESCO WEI programme.

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