

PAULA RAZQUIN

GLOBAL TRENDS IN TEACHING EMPLOYMENT

Challenges for Teacher Education and Development Policies

Our goals, rather, are to lay out the rough chronological boundaries of severable notable long-term trends and to isolate vital information and apparent major historical transition points to guide future case-study research. Without intensive, in-depth analyses of the broad trends that we describe, historians' and policymakers' understanding of why and how major changes in the teaching force have come about will inevitably remain superficial.

Sedlak & Schlossman, 1986, p. 1

Teaching is the source of employment for 62.8 million people worldwide, nearly three quarters of them in developing countries. Employment in education does not show signs of contraction. On the contrary, it has been on the rise since the 1970s, growing at an average annual rate of 3 percent, a rate slightly higher than the enrolment growth rate. The sheer volume of teaching employment and the potential for increased demand for teachers as countries continue to expand school participation presents opportunities and challenges for teacher education and professional development.

Stuart and Tatto (2000) have summarised the political and epistemological debates influencing teacher education reforms globally. They stress that reforms in the length, timing, location and sequencing of teacher initial education as well as curricular strategies are influenced by opposing visions of teachers' role vis-à-vis the State (the teacher as a professional versus the teacher as a technician and transmitter of the State's curriculum) and of knowledge as given or constructed. This chapter examines the evolution of teacher employment globally and the forces shaping it, and discusses their implications for teacher education and development policies. It stresses that the concurrence of global education agendas with economic and employment trends present another set of pressures to teacher education and development reforms, further constraining reforms in teaching. The chapter stresses the need for teacher education reforms to deal systematically with teacher quantity and quality pressures and the current harsh realities of teachers' work, further positing that, unless integrated within broader teacher labor market policies and a systemic vision for education expansion and quality improvement, teacher education and development reforms may even risk being counterproductive for both short- and long-term goals to improve teaching.

THEORETICAL FRAMEWORK

From Structural Adjustments to Education for All

For the last eight years the global agenda for education in developing countries has centered on achieving the Education for All (EFA) goals and the Millennium Development Goals (MDGs). In 2000, representatives from governments and from regional groups, international organisations, donors, non-government organisations and civil society more generally convened in Dakar, Senegal, to adopt a Framework for Action and six EFA goals to be achieved by 2015 (UNESCO, 2007). In addition, participants approved twelve critical strategies. One of these strategies envisaged enhancing the status, morale and professionalism of teachers. Countries pledged to ensure that by 2015 all teachers would have received initial training, in-service training programs would be operational and training would emphasise child-centered approaches and rights and gender-based teaching (UNESCO, 2000).

In parallel, world leaders met at a United Nations Millennium Summit in 2000 and approved an agenda to reduce global poverty, endorsing the MDGs and a series of targets and time lines to achieve them. Two of these goals are also on education: to achieve universal primary education of good quality (similar to the second EFA goal) and to eliminate gender disparities in education (first component of the fifth EFA goal).

Structural adjustment in education was a reform agenda of the mid-1970s to the 1990s that resulted from countries' need to stabilise their public accounts as a response to the international economic crisis and macroeconomic imbalances of the mid- and late 1970s. Teachers' compensation occupies a good portion of public current expenditures and adjustment to the public finances necessarily implied cutting on personnel costs. When it comes to teachers, cost-saving and cost-cutting measures meant a reduction in the relative weight of personnel expenditures either through freezing salaries, recruiting low-cost teachers (i.e., unqualified), increasing teacher workload (bigger classes) and worsening working conditions (ILO, 1996). The combination of economic recession cuts in public spending and, in some countries, education expansion resulted in devastating declines in education financing in developing countries, in the demand for teachers and in a worsening of teachers' working conditions from Central Asia (Steiner-Khamsi & Harris-van Keuren, 2008) to Latin America (ILO, 1996).

The movement fostered by the EFA Dakar Framework and the MDGs differs in at least two key aspects from the previous decade's approach based on structural adjustment programs. First, the global economic context differs. Whereas the structural adjustment years were years frequently characterised by economic recession, the EFA Dakar and MDGs agendas have so far taken place within a context of sustained economic growth – particularly in East Asia and the Pacific, South Asia and sub-Saharan Africa – and poverty reduction at global level, although extreme poverty still marks much of sub-Saharan Africa and income inequality has been exacerbated in many regions and countries. The economic bonanza has generally translated into higher gross national product; increased resources for the public sector, including education, in theory increasing the demand for public

school teachers in general or better teachers in particular, and increased governmental ability to provide better working conditions.

However, conditions on access to loans and donor support remain in the EFA and MDGs framework, and they can be very instrumental in the evolution of teachers' employment conditions. Conditionalities regarding teachers and teacher salaries persist, in the form of indicative benchmarks, public sector wage bill ceilings or "caps" on teacher recruitment (Bruns, Mingat, & Rakotomalala, 2003; Marphatia, Moussié, Ainger, & Archer, 2007; Takala, 2003). In 2002, the World Bank and other agencies established the EFA Fast-Track Initiative (FTI) to support progress in low-income countries, by encouraging an alignment of poverty reduction and education plans around universal primary education. FTI benchmarks for teacher quantity were set at 40 pupils per teacher and for teacher salaries at 3.5 of gross domestic product (GDP). Countries applying for FTI support are urged to consider these benchmarks and to find alternative salary schemes for the recruitment of new teachers if salary reductions are politically unfeasible (Takala, 2003). In practice, countries' own teacher-related targets have reflected FTI targets very closely (World Bank Independent Evaluation Group, 2006). Wage ceilings for the public sector have also figured prominently in the performance criteria or indicative targets in International Monetary Fund (IMF) lending and poverty reduction programs to 17 countries in Asia, Central America and sub-Saharan Africa, preventing or slowing down the recruitment of additional teachers, particularly trained teachers (Marphatia et al., 2007; Verhoeven & Segura, 2007).¹

The second key difference between the EFA/MDG approach and structural adjustment is that renewed donor and country commitments to achieving universal primary education access and completion has led to the abolition of school tuition fees in many countries (World Bank Independent Evaluation Group, 2006), a distinct turning point given that the previous strategies supported user fees or other cost-recovery/reduction measures in primary education including privatisation and decentralisation. At least fourteen countries have abolished tuition fees since the EFA goals and MDGs were adopted. Primary enrolment in those countries has soared. As a result the world has witnessed a second wave of rapid growth in school participation (the first was observed in the early 1970s). The rapid rise in enrolment in countries abolishing school fees put enormous pressures on teachers – and on education financing, since the elimination of fees resulted in reductions in school's budget (UNESCO, 2007).

METHODOLOGY

Teacher Labor Market Framework and Data

The discussion of global trends in teaching employment is structured around a traditional teacher labor market framework; in other words, around trends in the teacher demand and supply (Boe & Gilford, 1992; Santiago, 2002; Zabalza, 1979). Succinctly, the demand for teachers refers to the total number of teachers which governments and other non-governmental employers are able and willing to hire in any given year. The teacher demand is determined by:

The demand for schooling, as indicated by the school-age population and size of the student population (i.e. enrollment). If school participation and enrollments were to increase, and working conditions such as class size were to remain constant, the demand for teachers would rise as well.

Income and fiscal capacity to pay for education and teachers: teacher quantity and quality are largely influenced by countries' income level – richer countries would technically be able to pay for more and better educated teachers relative to their school population. Country income levels are exogenous to education budgets – they set the ceiling on policy makers' ability to finance teacher salaries and other social services and, therefore, to finance policies towards expanding and improving the teaching workforce.

The education budget or 'willingness' to pay for teachers: within the income level limits, governments can determine the portion of education budget allocated to overall teacher salaries as opposed to non-teacher expenditures. Other things being equal, the higher the proportion spent on teachers as opposed to other non-salary costs, the higher the number of teachers demanded.

Total teacher salaries: if teacher salaries were to increase, recurrent costs of schooling would increase as well and, other things equal, fewer teachers would be demanded. Alternatively, when salaries increase, employers have incentives to cut costs by substituting teachers for other technologies like distance education or by substituting high cost trained teachers by low cost, untrained ones.

Class size, teacher workload and instructional time policies: smaller classes, for example, require more teachers while, on the other hand, enrollment increases may not necessarily translate into more teachers if class size or teacher workload were to increase.

On the other hand, the supply of teachers refers to the total number of candidates available and willing to supply their services as teachers at any given time and conditions (i.e. qualification requirements). Sources of teacher supply are:

- current supply or continuing teachers: teachers already employed in schools minus those who leave or retire and
- new entering teachers:
- recent graduates of teacher training programs,
- a reserve pool of qualified teachers, experienced former teachers and graduates of teacher training programs from previous years (delayed entrants) who could apply for teaching positions, and
- other candidates who will apply via alternative credentialing programs, without the required qualifications or immigrant teachers.

At the individual's level, whether adults are willing to choose teaching as an occupation versus another alternative option and actually apply for a teaching post will be depend on different factors such as their expected earnings, real and relative earnings, life-cycle earnings, work environment and other individual characteristics such as their previous education investments and experience (Boardman, Darling-Hammond, & Mullin, 1982; P. J. Dolton, 1990).

Teacher shortage is one of the key issues constraining reforms in teaching and global progress towards education for all (UIS, 2006; UNESCO, 2008). Shortages are understood as insufficient number of teachers to teach children already in

school and to reach out of school children; they are understood as imbalances in the demand and supply of teachers. These imbalances are manifested not as classrooms lacking teachers but rather in high pupil-teacher ratios (PTRs) and high pupil to trained teacher ratios. In other words, pupil-teacher ratios operate as a demand and supply adjustment factor (Gilford & Tenenbaum, 1990).²

Increasing numbers of children of school age and increasing student enrollment is a major demand factor driving global trends in teaching employment, as the first part of the following section will show. Yet, in labor markets largely dominated by the public sector, as is the case of teacher labor markets and education provision in most countries, the teacher supply is largely a function of teacher salaries, both real salaries and relative to other occupations, and of desired pupil-teacher ratios (Boardman et al., 1982; P. Dolton, 1996). By setting teacher wages and adjusting class size, national, state or local governments shape the teacher supply in terms of its quantity-quality balance.

This chapter analyzes global and regional trends in the teacher supply. It examines absolute numbers but focuses mostly on the teacher supply on a per-pupil basis or relative to the number of pupils, as measured by the PTR. This is both to allow for comparisons that standardise for countries' population and school systems size, but also to shed light as regards the teacher supply and demand adjustments over time. The chapter examines teacher supply and demand adjustments in light of demand pressures, particularly increasing enrollments and education financing constraints, as discussed in the following section. The subsequent sections review key trends in teacher education reforms globally in light of the quantity-quality adjustments from the teacher supply perspective, and discuss the pressures that teacher education and development policies face in the context of global education agendas and economic and teaching-employment trends.

DATA SOURCES

This chapter uses international comparable data on teachers from two sources. Data before the 1990s comes from a UNESCO yearbook (1999) and is analyzed at global and regional levels only; regional data was processed only for some regions, as earlier regional classifications did not always match current ones. Series data for 1991 to 2006 comes from the UNESCO Institute for Statistics (UIS) as revised and re-examined for the 2008 and 2009 editions of the EFA Global Monitoring Report (UNESCO, 2007, 2008). The chapter updates previous analysis conducted by the International Labor Organisation (ILO) in the nineties (ILO, 1996; OIT, 1991). Additional literature is used to highlight particular cases.

RESULTS

Teacher and Enrollment Trends

The pre-primary, primary and secondary education sectors employ 62.8 million teachers worldwide in public and private schools in 2006, 72 percent of them in developing countries (which, however, account for 83 percent of global enrollment at those levels). About a third of teachers and pupils are in East Asia and the

Pacific, and more than half of all teachers are in the world's nine largest education systems and some of its most populous countries: China (with 12.7 million teachers), India, the United States, Indonesia, Brazil, the Russian Federation, Mexico, Japan and Germany.

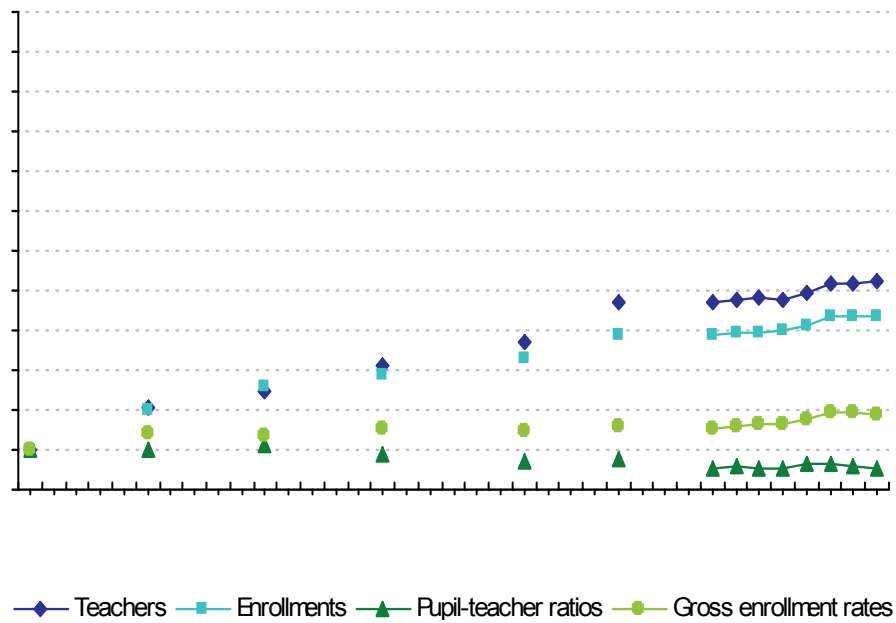
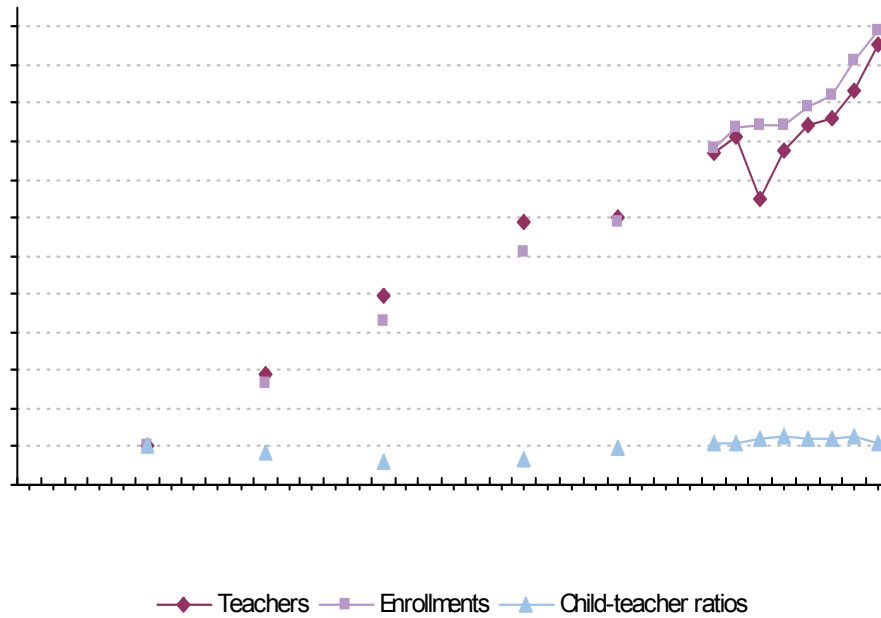
Trends in teaching employment have historically been in line with enrollment trends. In fact, enrollment is the most significant driver of total demand for teachers, although, as the following sections observe, other factors explain cross-country variations in the number of teachers relative to the pupil population, as measured by PTRs. Employment has been increasing since the 1970s at steady yet diminishing rates, averaging 3 percent annually, a growth rate slightly higher than that of enrollment. The increases have been steeper in pre-primary and secondary than in primary, mostly because primary education expanded earlier than the other two levels and therefore has had less room for expansion.

Although the increases in pre-primary teaching have been the steepest over the last 30 years, faster increases in secondary teaching since the 1990s were sufficient to change the shares of teaching employment between levels. In the mid-1970s, primary education accounted for 55 percent of all teachers and secondary for 38 percent; by 2006 the shares were 46 percent for secondary education and 43 percent for primary, even though primary education then accounted for 51 percent of overall enrollment compared with 38 percent for secondary.

Between 2000 and 2006 alone, employment grew by 12 percent (or 2 percent annually), again faster in pre-primary than in secondary and primary. The global trends mask substantial differences by region. While sub-Saharan Africa and South and West Asia show employment increases of nearly 30 percent each, and the Arab States and Latin America and the Caribbean nearly 18 percent each, employment declined by 5 percent in Central and Eastern Europe (in line with declining primary and secondary enrollment) and in Central Asia. Rapid increases in enrollment at all levels—assuming that they translate into increased demand for qualified teachers—put pressure on the capacity of teacher education and development programs.

Pre-primary teachers. Pre-primary education accounted for about 11 percent of all teachers and enrollment worldwide in 2006. Serious shortages are observed in Benin, Bolivia, India, Pakistan, Samoa, Uganda and Tanzania, which have child-teacher ratios of 40:1 or above. These shortages are compounded by shortages of trained teachers—teachers who have received the minimum qualifications to teach, based on national standards and policies (UIS, 2002). For example, in Belize, Cape Verde, Lebanon, Madagascar, the Syrian A. R. and Tanzania, overall there are more than 100 pre-primary children per trained teacher. The percentage of trained teachers alone is nevertheless limited for comparative purposes when countries vary in the level, duration and quality of teacher pre-service education. For instance, whereas in Cuba pre-primary teachers are required to hold a tertiary level teacher-training diploma, training requirements are strongly enforced and all posts are filled in by trained teachers, in the Syrian A. R. teachers are required to hold an upper-secondary level teacher training diploma and yet only 24 percent are trained (UNESCO, 2006).

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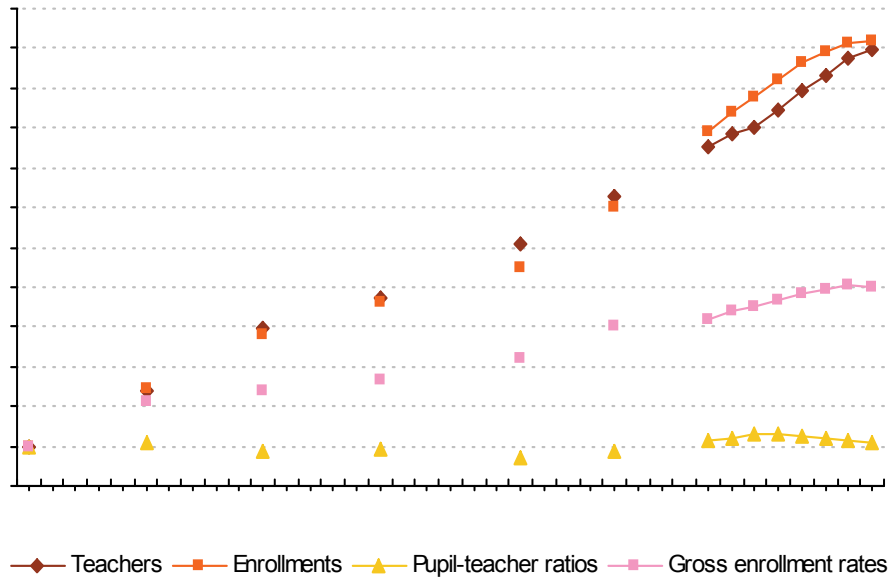


Figure 1. Evolution of teachers, enrollment and PTRs in pre-primary, primary and secondary education, 1970–2006

Sources: UNESCO (1999) and UIS databases for UNESCO (2007,2008).

Pre-primary teaching employment has been increasing at diminishing rates since the mid-1970s and it shows two rather distinctive historical patterns (Figure 1.a). From the mid-1970s to the mid-1980s, the number of teachers grew slightly faster (between 6 and 8 percent annually) than the increases in pupil numbers (between 5 and 7 percent annually). This was a period of global expansion with class size improvements, as shown by slight declines in child-teacher ratios, which were at 20:1 in 1975. By contrast, global expansion in the 1990s occurred at the expense of class size, which mainly reflects two dynamics. On the one hand, child-teacher ratios were very low in Central and Eastern Europe and Central Asia, and increased class size mainly reflected a general move toward a more intense use of available teachers. On the other hand, the ratios were already rather high in other regions, and rose slightly, showing the difficulties some countries have in continuing to increase teacher supply as enrollment grows. This was the case in East Asia and the Pacific and South and West Asia in the 2000s.

Despite the regional fluctuations, the trends of the 2000s show pre-primary teaching staff, enrollment and school participation all growing at an average rate of 3 percent annually, and average PTRs are 21:1. Employment growth in this decade has been highest in sub-Saharan Africa, a region with one of the lowest share of teachers but with recruitment on a scale large enough to compensate for the highest

enrollment increases worldwide. Teaching employment also rose in South and West Asia, but because it did at about two thirds of the rate of growth in enrollment, the regional child-teacher ratio increased to reach 40:1 in 2006. North America and Western Europe, the Arab States and Latin America and the Caribbean, on the other hand, also increased teacher numbers, but because enrollment rose only slightly or at a slower pace than teacher recruitment, child-teacher ratios declined.

Relatively few countries have sufficient data for an examination of changes concerning trained teachers. The percentage of trained teachers declined in nearly a third of the 31 countries with the data. Nevertheless, increases in the share of trained teachers are observed in more than half of the countries with data.

In short, past trends and lower school participation at this level than in primary and secondary indicate that there is potentially an increased need for graduates from pre-primary teacher education programs and that this might be an area where institutions and programs will likely expand. Indeed, they will need to expand if countries want to provide sufficient number of teachers to reach those lacking opportunities to access pre-primary education without compromising teacher quality.

Primary Education Teachers. Primary teachers represented 43 percent of all teachers worldwide in 2006, compared with 51 percent of world enrollment. Shortages of teachers are extreme in Afghanistan, Chad, Mozambique and Rwanda, all with more than 60 pupils per teacher. Comparative data on trained teachers is again limited in terms of country coverage but it shows that some countries face severe shortages: Belize, Cape Verde, Lebanon, Madagascar, the Syrian A. R. and Tanzania, for example, have one trained teacher per 100 pupils.

When ratios of pupils to trained teachers are compared with overall PTRs, teacher quantity/quality trade offs begin to be evident. In their quest to provide education for all, some countries trade quality (trained teachers) for quantity (untrained ones). About 15 percent of the 57 countries with 2006 data for both ratios had PTRs below 40:1, but their ratios of pupils to trained teachers were ratios above 40:1. Clearly, these countries are providing smaller classes by recruiting uncertified teachers. On the other hand, a fourth of the countries have both high PTRs and high ratios of pupils to trained teachers, suggesting they might have overall shortages of candidates. In both cases, there is a need to examine the dynamics in more depth: have these situations resulted from country preferences for expansion at the expense of teacher quality, or from shortages of graduates from teacher training, or from insufficient ability or willingness to invest in teachers or quality teachers and teacher training?

The overall long-term trend is positive in primary education employment: countries have been moving toward universal primary education and at the same time expanding the supply of teachers and improving average class size, particularly since the 1980s (Figure 1.b). Teacher employment grew at a global average rate of 2.3 percent annually between 1970 and 2006, higher than the 1.9

percent growth in primary enrollment. As a result, the global PTR fell, reaching 25:1 in 2006, albeit with fluctuations across time and across regions.

The first half of the 1970s was the period of the highest global expansion of primary school participation in the last 35 years, particularly in sub-Saharan Africa and the Arab States, the regions that had the lowest levels of participation. It was also the period of the highest growth in teaching employment, which grew 4 percent annually, a rate similar to that of enrollment, indicating countries' efforts to ensure that supply growth accompanied expansion. In fact, there were only two short periods in which the rate of increase in the teacher supply was not generally in line with, or slightly higher than, the increase in enrollment: growth in the teacher supply lagged slightly in 1975–1980 and 1990–1995.

The years after the World Education Forum in Dakar marked a push toward universal primary education in sub-Saharan Africa and in South and West Asia, the regions that were furthest from reaching this goal. Following measures to abolish school fees, school participation rose in the 2000s, reaching average growth rates of above 1 percent annually for the first time in three decades, although net enrollment ratios are still critically low in sub-Saharan Africa (UNESCO, 2007). Overall, rapid expansion did not significantly affect trends in teaching employment, except in sub-Saharan Africa, which experienced very high rises in participation, enrollments and teacher recruitment (albeit not enough to match the higher enrollment growth). While South and West Asia experienced a similar push for school participation, teacher recruitment stayed in line with demand, as the rise in enrollment was not as sharp as in some other regions. In Central and Eastern Europe, Central Asia and East Asia and the Pacific, meanwhile, teacher numbers and enrollment declined roughly in tandem.

The impact of abolition of school fees on teaching employment differed by country. In Burundi, Cameroon, Ghana, Lesotho, Madagascar, Rwanda and Tanzania, for example, the proportion of pupils to teachers increased sharply in the years after measures to abolish school fees were passed, mainly because enrollment leaped more rapidly than teacher recruitment. In Cambodia, the Gambia, Mali, Mozambique, Timor Leste and Viet Nam, among other countries, abolishing fees only accelerated employment and enrollment trends already evident before the measures were taken. Recruiting teachers under short-term contracts played a part in either preventing even worse rises in pupil-teacher ratios (e.g. in Cameroon and Madagascar) or maintaining previous trends in the ratios (e.g. Benin, Cambodia and Mali).

Data permitting assessment of recent changes in the percentage of trained teachers is available for 40 countries. Of these, 14 show declines. Most of the 14 have indeed recruited more trained teachers but they have also recruited still more untrained ones, so the share of trained teachers declined. On the other hand, in other countries the decline in the share of trained teachers is a consequence of actual declines in the absolute numbers of trained teachers, in some cases accompanied by increases in numbers of untrained teachers. Other countries, however, have managed to increase the share of trained teachers, showing efforts

to recruit more trained than untrained teachers, expand pre-service training and provide in-service training for uncertified teachers on a massive scale.

Secondary Education Teachers. In contrast to primary education, secondary education takes relatively more teachers (46 percent of teachers for all levels) than its share in enrollment (38 percent). The global average secondary PTR is about 18:1. Developing countries account for 68 percent of all secondary teachers world-wide (compared with the developing world's 78 percent share of global secondary enrollment).

Between 1970 and 2006, secondary teacher employment increased by an average of 5.5 percent annually, as did enrollment. Employment grew at diminishing rates, as in the other two levels; increases in secondary were higher than in primary yet lower than in pre-primary, however. Increases were remarkable in the Arab States, sub-Saharan Africa and East Asia and the Pacific, at 12 percent to 27 percent a year on average. Between 1970 and the mid-1990s, global secondary teacher employment rose in line with secondary enrollment. After 1995, the increase in employment lagged slightly behind that of enrollment. The global PTR increased slightly in the 1990s, and in 2006 was at the same level as in 1970, 18:1.

Global trends in the current decade are optimistic. The number of secondary teachers increased somewhat more than enrollment, with slight improvements in teacher workload. Unlike in pre-primary and primary, where employment is growing slightly faster in developing countries than in developed ones, or at similar rates, secondary education employment is growing much faster in developing countries, especially in South and West Asia and sub-Saharan Africa but also in Latin America, the Arab States and East Asia and the Pacific. In sub-Saharan Africa, though, increases in the number of secondary education teachers were insufficient to cover increases in enrollment. Central Asia experienced a decline in the number of teachers during a period of increasing enrollment, although teacher utilisation was much lower and the decline could reflect of a more efficient use of resources.

Teacher and Education Financing Trends

Enrollment trends are the main driver of teaching employment trends at all levels, as the previous section shows. However, countries' fiscal capacity (income level) and education expenditures influence the options countries face with regard the teacher quantity-quality trade offs. Income level puts a ceiling on governments' capacity for education investments; however, given their budget constraints, countries have some policy leverage when determining proportionate amounts actually allotted to education and teacher salaries.

Indeed, there is a distinctive pattern in the teacher supply in regards countries' income level. In primary education, low-income countries face consistent high pupil-teacher ratios whereas middle- and high-income countries do not (Figure 2). In 2006, average classrooms in low-income countries were 3 times bigger than in high-income countries; in other words, richer countries are big users of teachers compared with poorer countries.

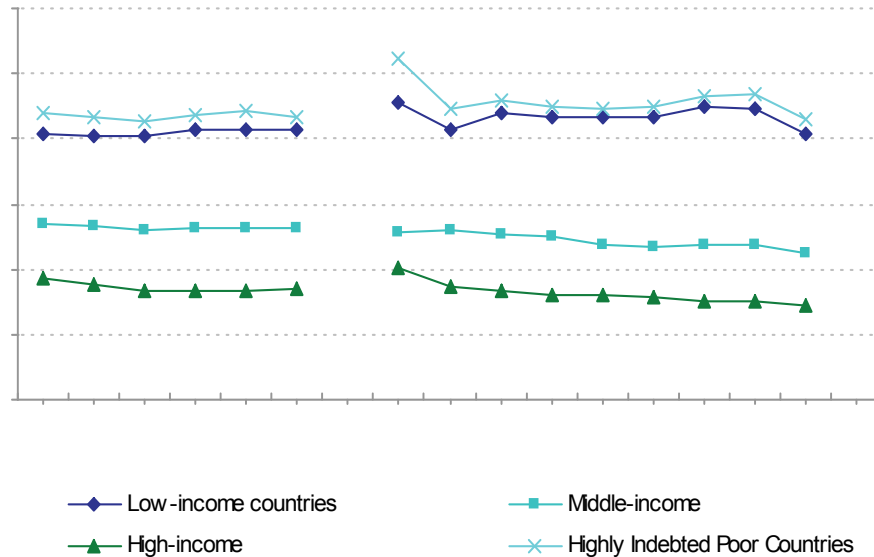


Figure 2. Evolution of primary PTRs by countries' income level, 1991–2006.

Sources: Data on pupil-teacher ratios come the UIS database for UNESCO (2007, 2008). The list of countries by income classification and the list of Heavily Indebted Poor Countries come from World Bank (2006).

The supply of teachers (i.e. as observed by PTRs) is strongly and significantly associated with countries' gross national product (GNP) per capita.³ In primary education, for example, high-income countries such as the United States and Norway provide relatively more teachers than low-income countries such as Mozambique, Rwanda and Chad. In fact, more than 80 percent of countries with teacher shortages (for instance with PTRs above 40:1) are low-income countries (Table 1). Similarly, the capacity to provide for trained teachers is linked to countries' income – more than 60 percent of countries with shortages of trained teachers (i.e. with a ratio of pupils to trained teachers above 40:1) are low-income countries. Nevertheless, GNP per capita explains between 20 and 65 percent of the PTR variation, depending on the level of education. In part, high ratios in low-income countries reflect higher expenditures on teacher salaries relative to GNP per capita. Education systems tend to be insufficiently expanded in low-income countries and high-skilled labor, i.e. with secondary education, is scarce. Teachers are generally required to complete secondary education and are amongst the highest educated people, pushing teacher salaries up relative to average salaries (Carnoy & Welmond, 1998; Glewwe & Kremer, 2005).

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Table 1. Number of countries with primary PTRs below and above 40:1, by country's income level, 2006.

Income level	Pupil-teacher ratios			Pupil-trained teacher ratios ^a		
	Below 40:1	40:1 or above	Total countries	Below 40:1	40:1 or above	Total countries
Low	22	21	43	6	14	20
Lower middle	45	4	49	10	6	16
Upper middle	34	0	34	6	2	8
High, OECD	21	0	21	n-a	n-a	0
High, non OECD	21	0	21	10	0	10
Total number	143	25	168	32	22	54

Source: UIS database for UNESCO (2008), World Bank (2007). Notes: (a) numbers of trained teachers are not available for high-income OECD countries.

The EFA agenda and the push toward universal primary education have triggered increases in primary pupil-teacher ratios in low-income countries, whereas ratios continue to decrease in better-off countries (Figure 2). Nevertheless, economic even short-term economic growth has allowed countries to provide for relatively more staff and institute moderate, albeit significant, reductions in class size. Increases in national GNP per capita between 1998 and 2004 are moderately and significantly associated with declines in PTRs between 1999 and 2006.⁴ Whether declines are the result of actual increases in teacher recruitment rates, declines in teacher relative salaries as the average education of the labor force increases, or declines in the school-age population are dynamics that deserve further attention. Still, qualitative improvements in the teaching workforce, i.e. increases in the quantity of qualified teachers relative to the number of pupils, have been more difficult to show.

Low-income countries face another constraint in the relative provision of teachers. Precisely because of their income levels, low-income countries have proportionally higher government expenditure on education than do high-income countries. In addition, primary education takes a bigger share than other levels and the burden of teacher compensation is higher too.⁵ The results are constraints on spending on other non-teaching inputs and incentives to decrease teacher salaries or find alternative, cheaper, means of teacher provision and education expansion (i.e., larger classes or recruiting untrained or contract teachers).

Cutting on Teacher Salaries. In Latin America and many sub-Saharan countries, teacher salaries have been shaken by the introduction of structural adjustment policies in the 1980s and 1990s (Education International, 2006; ILO, 1996) – and the EFA agenda has added further salary cuts as education budgets stretched with yet another wave of increased school participation. In many low-income countries in sub-Saharan Africa and few in Asia, teachers are seriously underpaid despite salary increases in the last five years (Sinyolo, 2007). In Bangladesh, Kenya, Lao

PDR, Malawi, Nepal, Nigeria, Sierra Leone, Pakistan, the U. R. Tanzania and Zambia, for example, salaries do not even cover for the basic living needs and are roughly below the poverty line (Bennell & Akyeampong, 2007; Benveniste, Marshall, & Santibañez, 2008). Teacher hunger is not uncommon in rural Lesotho, Sierra Leone and Zambia. In Central Asia, because the teaching profession has become unattractive, without exception all governments in the region substantially raised teacher salaries over the past few years, but teacher salaries still remain below the national average salary although statutory teaching hours are for a part-time schedule (Steiner-Khamsi & Harris-van Keuren, 2008). In Azerbaijan, Kazakhstan and the Kyrgyz Republic, for example, salaries in the education sector are 60 percent or less than the national salary average. In Latin America, teacher salaries are high enough to enable teacher households to live “free of poverty” but they are lower than wages in comparable professional and technical occupations, although the official teaching week schedule, without considering lesson planning, grading and other work done at home, is generally between 13 and 38 percent shorter than in other occupations (Morduchowics and Duro, 2007).

As has been said, teacher wages constitute a considerable proportion of public expenditures in education and of all public-sector wages. An increase of teacher salaries has, therefore, great repercussions not only for public sector expenditures but also for the economy as a whole. To break these drawbacks, teacher salary reforms are increasingly advanced through reforms in the salary structure, including bonuses, allowances and performance-based pay linked to results-based public sector management; increasingly seen in many developing countries in varied regions.⁶ These reforms permit teacher salary raises to be done selectively, bringing down the costs of salary updates.

Flexible forms of employment. In addition to adjusting the teacher salary package, other cost-saving measures include recruiting lower-cost teachers: unqualified or less experienced teachers brought up to date by in-service training, often working under temporary or limited duration contracts. A trend of weakened social protection programs in the public sector and job insecurity through fixed-term contracts was incipient during the years of structural adjustment programs (Education International, 2006). Yet recent pressure to achieve EFA, combined with shifts toward decentralised teacher management and school autonomy, has paved the way for increased local recruitment on short-term contracts, generally to boost expansion in rural areas or, in some instances, to compensate for inefficiencies in centralised teacher management and deployment systems. Recruiting teachers outside the civil service, the so-called contract teachers,⁷ is often explicitly endorsed in poverty reduction programs to control the wage bill from increased enrollment. In the Niger, for instance, donor recommendations stress the policy of recruiting contract teachers and urge the country to resist the temptation to adjust their salaries (World Bank, 2004).

Recently compiled data for thirteen sub-Saharan countries shows contract teachers making up nearly half or more of the teaching force at least in ten countries (UNESCO, 2007). Bangladesh, Cambodia, China, India (mostly northern states), Indonesia, Kenya,

Nepal, Pakistan, the Philippines and Sri Lanka have also made extended use of contract teachers, as have countries implementing school autonomy reforms in Central America (Di Gropello, 2006; Duthilleul, 2005; Fyfe, 2007; Göttelmann-Duret & Tournier, 2008; Govinda & Josephine, 2004; Green, 2005; Muralidharan & Sundararaman, 2006; Nath, 2006; Pandey, 2006).

Recruiting teachers under short-term contract certainly eases the cost of rapid expansion, albeit at the expense of creating dual teacher management systems and uneven conditions of service, further demoralizing teachers. Nevertheless, the trend has led to huge demand for a new type of in-service training – short-term courses aimed at providing basic classroom knowledge and skills, and often compensating for teachers' educational deficiencies. Such training stands in contrast to the intense professional development envisioned as the application of scientific and organisational advances to enable continued improvement of teacher knowledge and practices. As it is a fairly recent phenomenon on a wide scale, its financial implications, as well as the long-term implications for the attractiveness of the profession, have yet to be studied.

Teacher Education Reforms

On the teacher supply side, another major constraint on meeting demand for trained teachers is countries' ability to produce the required numbers of entrants to and graduates from teacher education programs (although other forces not discussed here such as teacher attrition due to teacher retirement, opting out for other occupations, teacher migration and HIV/AIDS are also concerns in developing countries). A recent paper (UNESCO-IBE, 2007) explores the institutional location of pre-service training programs for primary and lower secondary teachers in 170 countries. The study shows that a majority of countries require advanced degrees taken at tertiary level, in universities (75 percent), or at post-secondary non-tertiary institutions (10 percent). Yet, nearly 15 percent of countries train teachers at secondary-level normal schools. The majority of these countries are in sub-Saharan Africa, with a few in East Asia and the Pacific and in Latin America and the Caribbean. More than a third of sub-Saharan African countries train their teachers at secondary level; most have PTRs above 40:1, indicating teacher shortages.⁸ If changes in demand for teachers have shaped the evolution of teacher employment and will continue to do so, changes in supply of new teachers can be influential as well. In previous decades, teacher education and development saw some key institutional trends (ILO, 1996), mostly in attention to improving quality, raising the knowledge and skills level of future teachers and increasing the attractiveness of teacher training programs. These upgrading trends continue today in the context of the EFA goals and MDGs. Almost every country in sub-Saharan Africa is upgrading teacher education (Mattson, 2006); however, rapid expansion and teacher shortages are forcing some countries to downgrade training requirements and duration so as to put graduates into the workforce faster.

The Upgrading/Downgrading Dilemma. Teachers' knowledge and skills have become central to the reform goals so much so that many developed and developing

countries are upgrading pre-service teacher education. Many countries in which teacher education was at secondary-level schools offering a major in education and a teaching credential have moved it up to post-secondary non-tertiary institutions or university. Some countries with teacher education at the post-secondary non-tertiary level are relocating it to universities, competing with other professional degrees. These trends, evident in sub-Saharan Africa, Asia, Central and Eastern Europe and Latin America (Avalos, 2000), can have unintended implications, as they increase the relative opportunity cost of teacher education programs, reduce the number of candidates enrolling in teacher training, in some countries exacerbating teacher shortages. Entry and Graduation Requirements. Teacher education and development institutions, meanwhile, have had to do much more than simply upgrading their institutional location. In previous decades, industrialised as well as some Latin American countries increased admission requirements, for example, helped by an economic downturn in which unemployment rose and teaching became more attractive as guaranteed employment, despite falling salaries (ILO, 1996). More recently, however, countries in sub-Saharan Africa facing acute shortages and less expanded secondary education and others in Latin America have instead relaxed qualification requirements for teacher training or reduced/accelerated teacher training (Mattson, 2006; World Bank, 2008). Mexico, for example, recently agreed to give early childhood education diplomas to staff with proven experience in nursery schools, a higher education or equivalent degree and adequate results on an accreditation exam (Mexico Secretaría de Educación Pública, 2008). Tajikistan too abbreviated the course work in teacher education by one year to dispatch last year students as teachers to rural schools (Steiner-Khamsi & Harris-van Keuren, 2008). In Mozambique, for example, a shortened duration for pre-service training (from two years to one) has been explicitly presented as an alternative to containing the cost increases of expanding the teaching force, as teacher salaries are based on years of training (Takala, 2008).

Diversification. Finally, there is a tendency to diversify the supply of pre-service education and accept alternative routes to teacher certification. In developed countries this has generally been a way to recruit highly skilled candidates in sought-after subjects, such as mathematics and sciences, who would not consider teaching if they had to go through years of formal training (OECD, 2005). On the other hand, countries in rapid expansion (as well as countries under conflict or fragile states) are edging away from such trends, instead focusing on putting more teachers in the classroom, often bypassing pre-service education and institutionalizing in-service teaching credentials for practising teachers, as in Bangladesh, Malawi, Nigeria or Sudan (Bangladesh Ministry of Primary and Mass Education, 2008; Mattson, 2006).⁹

Recruiting unqualified teachers under contract has also encouraged massive expansion of in-service training, often served through distance education models (for example in Ghana, Guinea, Malawi, Mozambique, Tanzania and Uganda, see Mattson, 2006) or school clusters and teacher resource centers serving remote areas (as in Ecuador, Malawi, Mali and Uganda, see Giordano, 2008). Despite the success of these strategies, they can pose challenges for professional development

programs, as participating teachers who have not been previously exposed to the basics may find it difficult to grasp new methods or to strengthen their theoretical knowledge and practical teaching skills.

Removing access barriers to teacher education. Reforms affecting teacher education can also have balancing effects as far as the teacher supply is concerned. Countries are finding ways to remove barriers to access to teacher training programs to encourage candidates (mostly minority candidates like women or candidates from ethnic groups or rural areas) to enroll, usually on condition of accepting posts in areas and schools that are difficult to staff. Pakistan, for example, implemented a comprehensive approach to overcoming shortages of female teachers and improve girls' schooling by opening teacher training institutions in rural areas and promoting female enrolment in teacher training (Göttelmann-Duret, 2000). Teacher training scholarships and conditional cash transfers for rural postings, linked to service requirements, are now common policies in Central Asia, as in the Kyrgyz Republic, Kyrgyzstan, Mongolia, and Tajikistan (Steiner-Khamsi, Mossayeb, & Ridge 2007).

CONCLUSION

Opportunities and Challenges for Teacher Education and Development

What can we learn about education and development needs of teachers by looking at the evolution of teachers' work? Has teachers' employment changed in light of global education agendas? What challenges do teacher education and development institutions and programs now face? Improvements in teacher education are not automatically reflected in an overall improvement in the teaching workforce, mainly because of the costs involved in the additional higher salaries that better-trained teachers can command and of governments' constraints to further invest in teachers. Upgrading teacher training may even be counterproductive if countries at the same time recruit more untrained teachers to supply expansion, and can make it more difficult for countries with shortages to find teachers.

This chapter has stressed that teachers' work in developing countries is vulnerable to global trends in education, the economy and employment. Teacher unemployment is not as serious as that in other economic sectors or occupations (United Nations, 2007)—education continues to be a labor-intensive enterprise and education expansion has not been a “teachless” expansion, as teaching employment growth trends indicate. Yet, as in other sectors and occupations, governments adjust labor contracts or working conditions to meet increased demand and save on labor costs. Teaching is becoming a less secure profession, a trend that will undermine teacher supply and quality, foster expansion in quantity without quality and, ultimately, have implications for the management of teacher education and development.

Teacher education and development programs often lack understanding of the realities of teachers' work and of the socio-economic forces shaping that work and teachers' professional identity. The issue is what role teacher education and development institutions and programs can take in facing these global challenges. In the context of current and future realities of teachers' work, teacher education and development institutions and programs, and the policy makers dealing with

them, face differing challenges, some of them pulling in opposing directions and involving constraining visions.

One key challenge is how to reconcile the pressing need to recruit and educate increased numbers of teachers with the need to maintain or improve training standards and teaching effectiveness. What are the institutional, organisational and pedagogical arrangements most conducive to responding to both needs? How do teacher education and development institutions manage to recruit and graduate increasing numbers of teachers while improving standards? Should quantity needs take precedence over quality ones? What is the best combination of pre-service and in-service teacher education?

Another challenge is how to reconcile the need to educate teachers for the current realities of their work with a vision of more progressive pedagogies. Many teachers will face seriously overcrowded classes which pose very different classroom management, lesson planning and pedagogical demands than those derived from child-centered visions and intellectual, innovative, autonomous and effective teaching. Appropriate measures need to be taken regarding training to ensure that the training needs of future teachers and progressive education agendas are optimally balanced with the exigencies of the current harsh realities. For example, how to balance traditional roles of in-service training with the needs of teachers who have not gone through pre-service teacher education and need their own general secondary education knowledge and skills to be reinforced?

A third challenge entails reconciling a general vision for teacher education and development with one that targets particular pupils as well as teachers' needs. Work in rural schools or in multigrade settings, or work with children with special needs, such as working children, requires very different knowledge and pedagogies than preparation for work in traditional urban classrooms. Should certain institutions and programs specialise in educating teachers to work in these specific contexts or should all future teachers be educated to understand and respond to the needs of these particular pupils? Halfway to the deadline for meeting the EFA goals and the MDGs, there is arguably a risk that the pledge to ensure that all teachers receive initial and in-service training will not be met. Systematic planning of teacher education and development programs in light of education expansion, quality improvement and teacher quantity-quality trade-offs is not often incorporated into sector-wide reforms and even less into poverty alleviation programs associated with the MDGs.¹⁰ Furthermore, because the reasons for constraints on an adequate supply of qualified teachers are hardly ever examined systematically and dynamically (in terms of continuous adjustments in teacher supply and demand), such plans rarely look at countries' options for removing teacher supply barriers, or the costs involved. Countries benefit from teacher education and development policies being linked to broader staff needs stemming from wider education expansion (Lewin & Stuart, 2003). However, when this alignment takes the form of more lenient teacher pre-service entry requirements and shorter teacher pre-service training, it harms quality.

A clear systemic alignment regarding teacher labor market and teacher policies is imperative, as is incorporation of a human resources perspective into long-term

education and national development planning (Darling-Hammond & Sykes, 2003). For that, a better understanding of teachers' work, the supply and demand dynamics and the roots of key problems for teachers, as well as a clear understanding of their current and future needs, are essential. Teacher education and development institutions and policy makers cannot afford to continue operating in a disconnect from financial, managerial and other sector-wide reforms and trends.

NOTES

- ¹ Conditionality and wage bill ceilings are currently being revisited. Proposals argue for donor's need to negotiate macro-economic policies that prioritize recurrent expenditures on education and other public services, a switch from prescriptive conditions to conditions based on the countries' development programs, more flexible wage ceilings, and for increases in long-term and predictable external aid to fund teacher salaries in order to accompany progress towards internationally agreed poverty reduction and education goals (Foster, 2008; Third High Level Forum on Aid Effectiveness, 2008; Verhoeven & Segura, 2007).
- ² Pupil-teacher ratios are calculated by dividing the total number of teachers by the total number of students. Because it is based on teacher headcounts, including teachers who are on leave, distance education teachers and part-time teachers, the pupil-teacher ratio is a rough measure of class size. Although benchmarks vary by country, high ratios generally indicate insufficient numbers of teachers relative to the number of children to be cared for and taught. In primary education, ratios above 40 pupils per teacher have been taken as an indication of teacher shortages, at least for the purposes of global comparisons.
- ³ Correlations between PTRs in 2006 and GNP in 2004 are -0.50 for pre-primary, -0.81 for primary and -0.63 for secondary education, all significant at the .000 level. Correlations are consistent with those shown by Carnoy and Welmond (1998) using data for the late 1980s/early 1990s for 83 countries. Correlations between pupil-trained teacher ratios and GNP per capita are also significant albeit smaller.
- ⁴ Even after controlling for countries GNP per capita in 1998.
- ⁵ This is consistent with Mingat and Pen's (2003) analysis comparing teacher salaries as a share of per capita GNP between richer and poorer countries.
- ⁶ Reforms in teacher salary scales and selective salary incentives are being implemented in many regions and countries. See for example Díaz Barriga and Inclán Espinosa (2001), Glewwe, Ilias and Kremer (2003) and Steiner-Khamsi and Harris-van Keuren (2008) for a summary of reforms in salary scales through allowances and merit-pay schemes.
- ⁷ Also called paraprofessionals or para-teachers, volunteer teachers or community teachers. In Latin America they are often called *maestros empíricos*, *aspirantes* or *autorizados*.
- ⁸ The UNESCO Institute of Statistics (UIS) has also examined teacher qualification standards from a selection of countries in various regions (UIS, 2006). Although some discrepancies were found between the UIS and the UNESCO-IBE study, all of them were in relation to whether teacher training was placed in post-secondary, non-tertiary institutions or post-secondary level, which does not affect the numbers shown in the text.
- ⁹ Newly recruited primary teachers in Bangladesh undergo a year-long in-service training program leading to a certificate in education instead of having to hold a teaching degree (Bangladesh Ministry of Primary and Mass Education, 2008).
- ¹⁰ An analysis of poverty reduction strategy papers and education plans in fourteen countries (Giffard-Lindsay, 2008) shows that, even where concerns and strategies addressing teacher education and development needs are addressed, coverage is often brief and unsystematic, and presented in isolation from other strategies with direct or indirect effects on teacher supply and demand, for instance the increased shift towards flexible teacher contracts or teacher salary caps.

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