

## **Building Human Capital: Is Latin American Education Competitive?**

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“A country’s ability to absorb new technologies, to produce goods and services that can reach standards of quality and performance acceptable in international markets, [and] to engage with the rest of the world in ways that are value-creating, is intimately linked to the quality of its schools...” p.xxi, *Lopez-Claros, et. al., Global Competitiveness Report 2005-2006*

Latin America’s ability to compete successfully in global markets depends significantly on the quality of its labor force, which in turn depends on the quality of its schools. Good education improves workers’ skills, promotes growth, reduces poverty and provides an important foundation for building the institutions, transparency, and good governance that enable production to happen.

It is no coincidence that two of the nine “pillars” critical to national competitiveness and productivity in the World Economic Forum’s Global Competitiveness Index deal directly with primary education and higher education and training. A third pillar—“innovation”—is powerfully linked to strong research institutions, the availability of high quality scientists and engineers and effective university-private sector collaboration in order to create new knowledge/products. But Latin America lags in all of these areas. Without substantial improvements to its education systems, the region will clearly be at a disadvantage as it seeks to position itself in the global knowledge economy.

Latin America neglects its education systems at its peril. Why?

- Companies can find cheap labor elsewhere. Latin America’s success increasingly depends on developing a large pool of highly skilled labor, both because the global economy is becoming more knowledge intensive and because huge numbers of lower-wage unskilled Chinese and Indian workers drive down demand for low-skill workers elsewhere (Birdsall, et. al., 2007). Indeed, surveys indicate that nearly 60 percent of firms that do business in Latin America cite the lack of skilled personnel as an important constraint to productivity in the region (De Ferranti, et. al., 2003, p.118)
- Improving enrollment without improving learning will have only a limited impact on productivity. Recent studies have found that investments in quality (particularly as measured by student achievement in math and science) matter as much, if not more, for growth than getting kids in school and keeping them there longer (Hanushek, 2005). Unless Latin America can produce top-quality graduates capable of taking on more complex tasks and adapting to changing environments, the most competitive firms and workers (and the benefits these accrue for a country’s economy) will continue to go elsewhere.
- Educational inequalities exacerbate the region’s income inequalities—under-utilizing large portions of the potential labor force and adding to social tension. Latin America is notorious for the large and growing income inequalities between its rich and poor citizens. Education both contributes to these inequalities (through its effects on earnings) and is affected by them (because poverty constrains people’s access to learning). The result is that while an elite few capture substantial wage premia for completing secondary and tertiary education (Birdsall, et. al., 2007), the vast majority of Latin America’s current and future workforce fails to live up to its potential. This in turn has a negative impact on growth and social stability.

Latin American countries are working hard to improve schools, with some success. Not only are more children in school, they stay longer, leading to an increasingly educated labor force. Most governments recognize the importance of making quality education for all a driving force in economic development and social equity, and are investing more to make that happen. Throughout the region, countries have also taken important steps to establish national standards, create and consolidate national testing systems, and place more authority and responsibility in the hands of municipal governments and schools—critical components in making schools better. Leaders from business, politics, churches, the media, and civil society are also joining the effort. Despite these significant achievements, however, student learning remains low and inadequate for the needs of modern societies.

### Levels of education are rising, but remain behind competitors

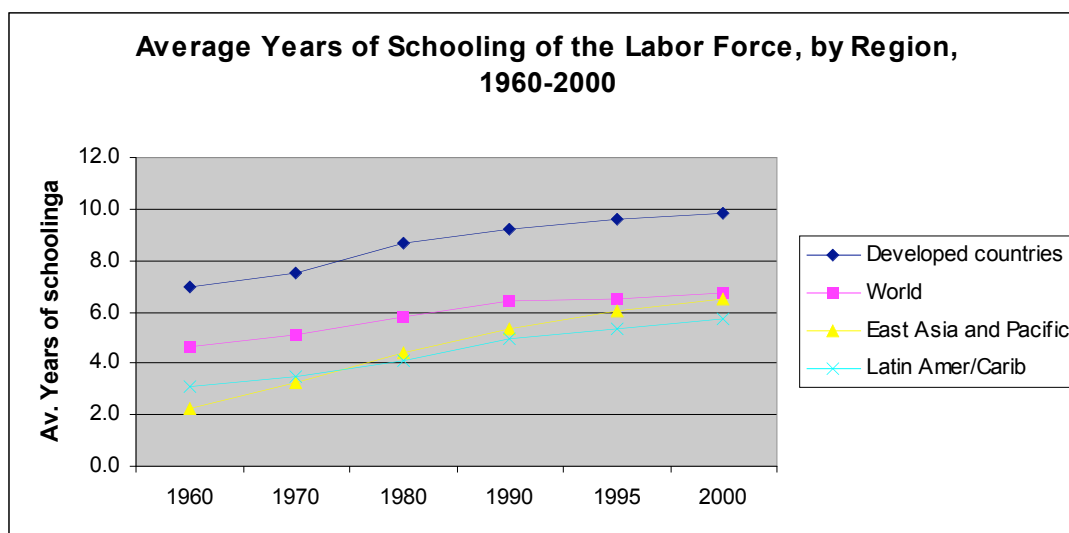
The quantity of education in Latin America is growing steadily. Enrollments are rising at every level, and more children are completing more years of schooling than ever before. Progress, however, still lags behind many parts of the world, including East Asia and Eastern Europe.

#### *Years of schooling*

Over the past several decades, the region has seen a steady increase in average years of schooling of its labor force—rising from around 3 years in 1960 to nearly double that in 2000. Nonetheless, the average worker still attains far less than a complete high school education. A workforce with so little education makes it hard for countries to move beyond industries focused on primary materials and manual labor to those based on advanced production processes and higher value-added products (Lopez-Claros, et. al., 2005).

Moreover, workers in Latin America have less education than their counterparts in East Asia and Eastern Europe, and the gap with East Asia may be growing (Figure 1). Indeed, recent World Bank analysis shows that Latin American workers have almost 1.5 years less schooling than do workers in countries with similar incomes, while workers in the East Asian tigers have almost one year more (De Ferranti, et. al., 2003, p.45).

**Figure 1. Average Years of Schooling of the Labor Force, by Region, 1960–2000**



Note: “Labor force” is defined as those aged 25 and over.

Source: Barro and Lee, 2001.

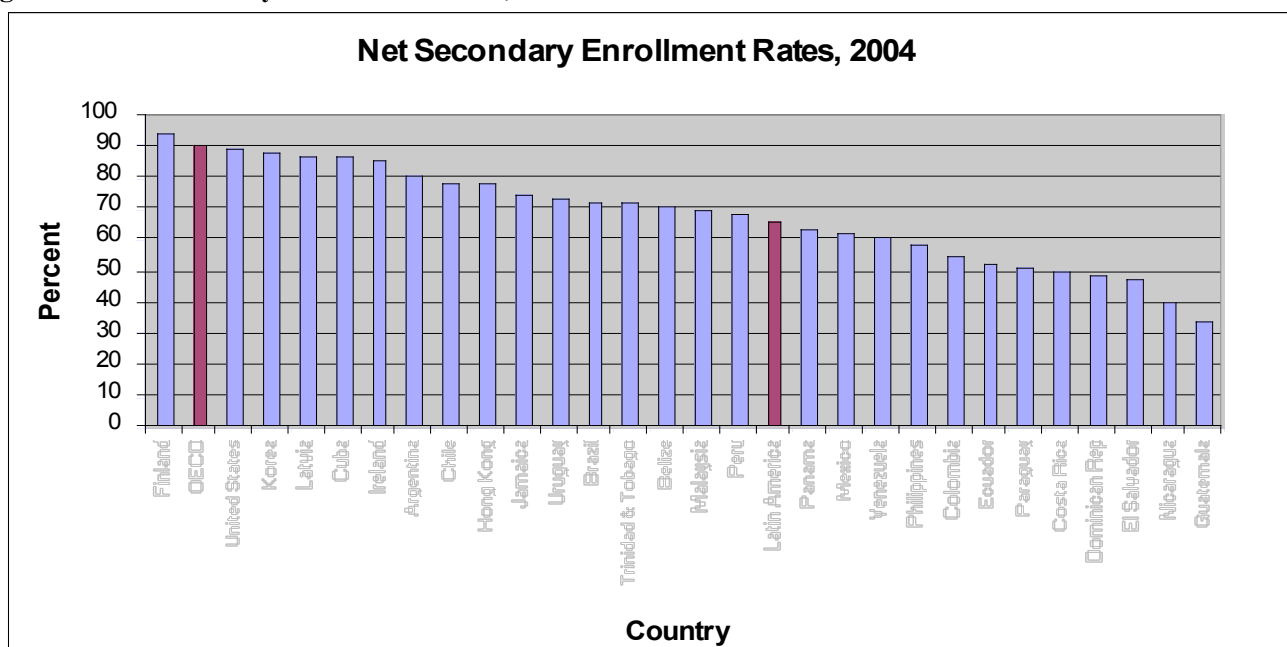
## Basic Education

More Latin American children enter school today than ever before and most of them complete primary school. Pre-school enrollment rates are above the world average, and most countries are close to getting every child (except the poorest and most isolated) to enter primary school.

Even so, four of every 10 children still do not enroll in pre-school—a disturbing figure given the importance of early instruction in providing children, and particularly poor children, with the foundation for future learning. One in ten still do not complete primary school, and less than half of young people in rural Brazil, Guatemala, and Nicaragua do so (ECLAC, 2005a, b).

The most noteworthy problem, however, comes at the secondary level, where enrollment and completion rates in most countries are still below those of countries with similar levels of income—and particularly below the East Asian tigers. Around two-thirds of secondary-aged youths are enrolled in secondary school, far fewer than in OECD countries, Korea, Ireland or Hong Kong (Figure 2). According to one recent estimate, secondary enrollment rates in Latin America are almost 19 percentage points *behind* what would be expected given countries' incomes, while rates in the East Asian tigers are nearly 18 percentage points *higher* than would be expected (De Ferranti, et. al., 2003, p.28).

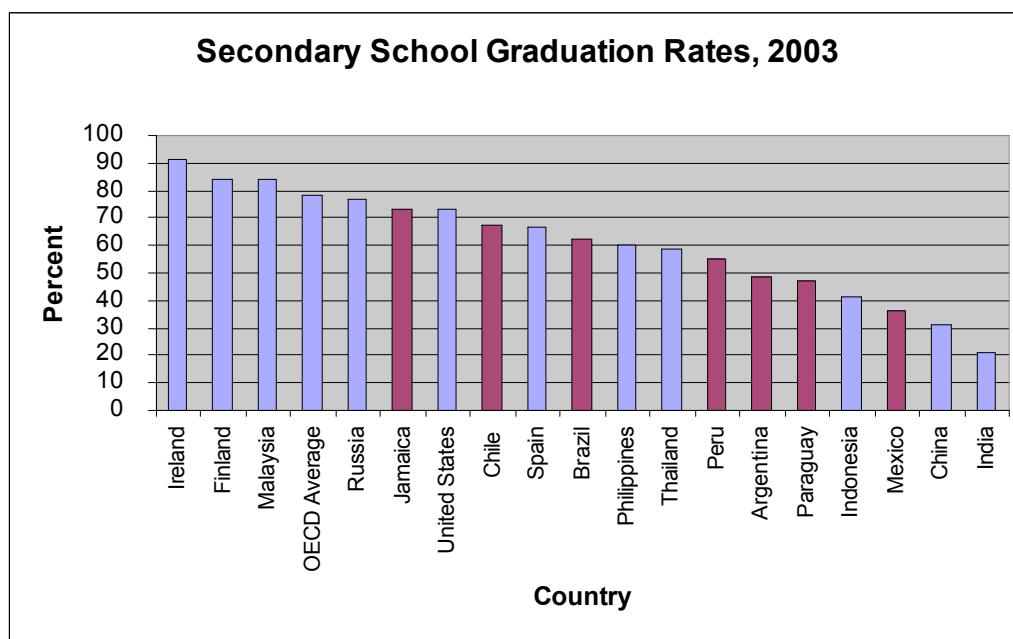
**Figure 2. Net Secondary Enrollment Rates, 2004**



Note: All data most recent year within two years of date listed.  
Source: World Bank, 2006a and Edstats online database, June 2006.

Few Latin American countries regularly report secondary completion rates, but among those that do around 60 percent or less of the secondary-aged population graduates (Figure 3). Argentina, Paraguay, and Mexico have rates below those in Malaysia, the Philippines, and Thailand, where gross domestic product (GDP) per capita is similar or lower.

**Figure 3. Secondary School Graduation Rates, 2003**



Note: Data are upper secondary graduation rates and are for the most recent year available, 2001–03.

Source: *OECD Education at a Glance, 2005*.

### *Tertiary*

Around a quarter (26 percent) of university-age youths are enrolled in higher education in Latin America, well above the rate of 16 percent in 1985 (World Bank 2006a, Winkler, 1990). This is similar to the world average (24 percent) and is well above the average for East Asia and the Pacific (17 percent) (Figure 4).

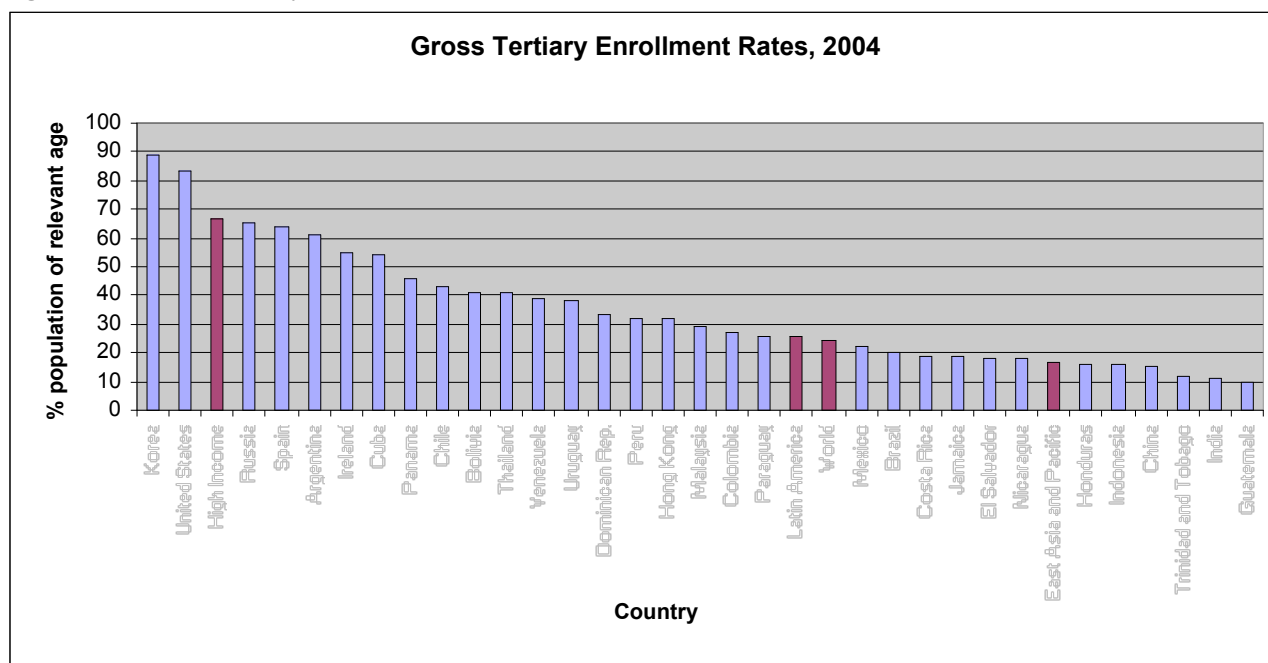
However, enrollments are still less than half the average for high-income countries (67 percent) and well below rates in more successful economies, like the United States and Korea. Recent estimates suggest that Latin American tertiary enrollments are around 10 percentage points lower than one would expect for their income, while East Asian tigers have a surplus of about 5 percentage points (De Ferranti, et. al., 2003). And enrollments at this level appear to be growing more slowly in Latin America than in East Asia and high-income countries, probably due at least partially to bottlenecks at the secondary level in LAC.

Moreover, most Latin American university students never complete their studies. Forty percent of Argentine university students drop out in the first year, and only a quarter of those admitted goes on to graduate. Only a third of those admitted in Chile and half of those admitted in Colombia graduate (Holm-Nielsen, et. al., 2005, p.46). The situation is similar in Mexico, where only 30 percent of those that enter in any given year graduate (Oppenheimer, 2005, p.318). This has tremendous ramifications both in terms of overall skill levels and for education finance, where large sums of public monies support a small cadre of college students who seldom complete their degrees, at the expense of large numbers of students who never reach the tertiary level.

At the graduate level, available evidence suggests that Latin America is also at a disadvantage. While OECD countries produce one new Ph.D. per 5,000 people, in Brazil the ratio is 1 per 70,000; in Chile, 1 per 140,000, and in Colombia 1 per 700,000 (Holm-Nielsen, et. al., 2005, p.41). The region's limited number of scientists and advanced degree recipients

weakens the region's competitiveness by limiting countries' ability to use and generate knowledge, and to carry out research.

**Figure 4. Gross Tertiary Enrollment Rates, 2004**

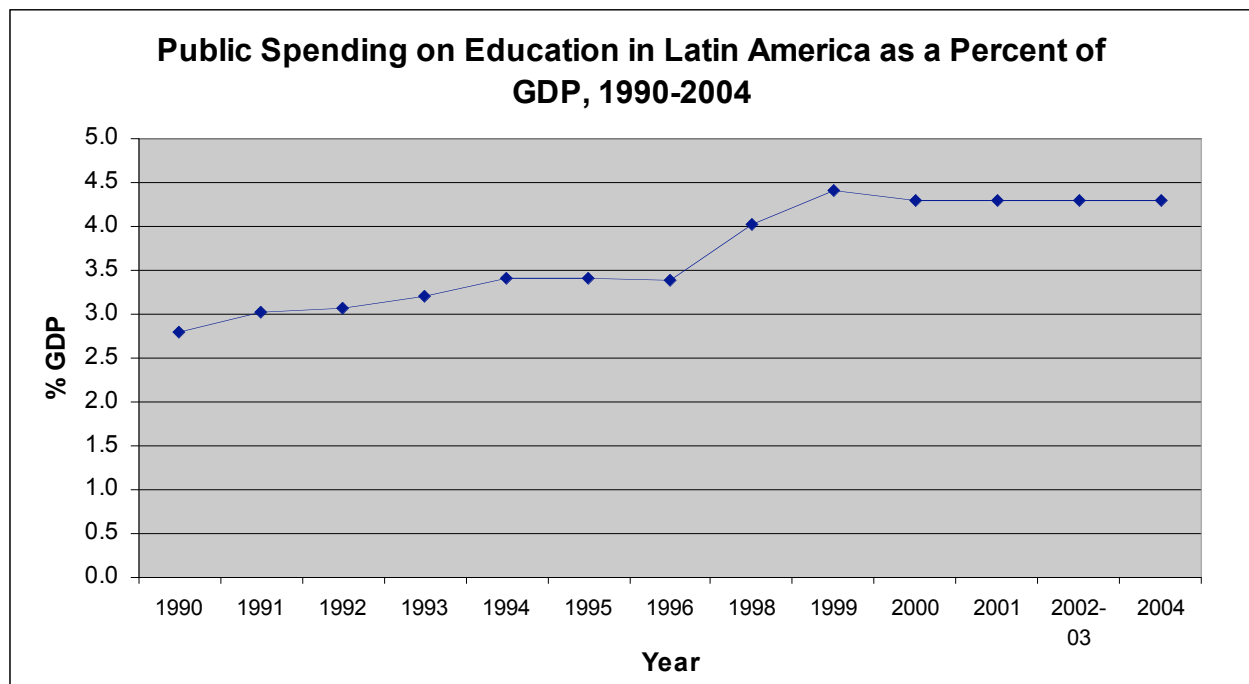


Source: World Bank, 2006a.

### **Investment in education is increasing, but remains inadequate, inefficient and inequitable**

Almost all governments are devoting more money to education, both as a percentage of gross domestic product (GDP) and in per pupil terms (UNESCO, 2005). Public spending increased from 2.7 percent of GDP in 1990 to 4.3 percent in 2004 (Figure 5). This is about the same as the world average (4.4 percent), although lower than the 5.6 percent that high-income countries spend (World Bank, 2006a).

**Figure 5. Public Spending on Education in Latin America as a Percent of GDP, 1990–2004**

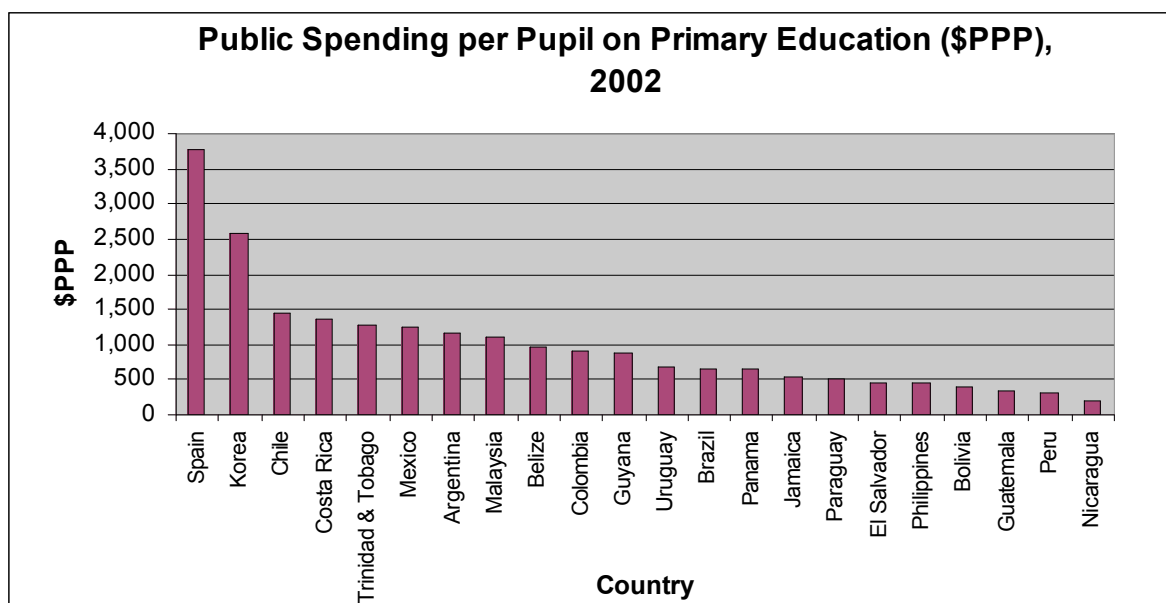


Note: Data for 1997 are not available.

Source: World Bank, 2006a and Edstats online database June, 2006.

However, even after adjusting for differences in the cost of living, spending per primary school student varies widely, ranging from around \$190 in Nicaragua to around \$1,450 in Chile (Figure 6), and remains well below developed countries, where spending averages around \$4,200 per student. Although there is no magic number for optimal spending, it is unlikely that Nicaragua is getting the same quality education for its students as the Chileans, who spend almost ten times more. Nor are the Chileans likely to be getting the same globally competitive quality education as OECD countries that invest three times as much. Moreover, current spending levels are almost certainly insufficient to meet the additional needs common among children from disadvantaged families.

**Figure 6. Public Spending per Pupil on Primary Education (\$PPP), 2002**

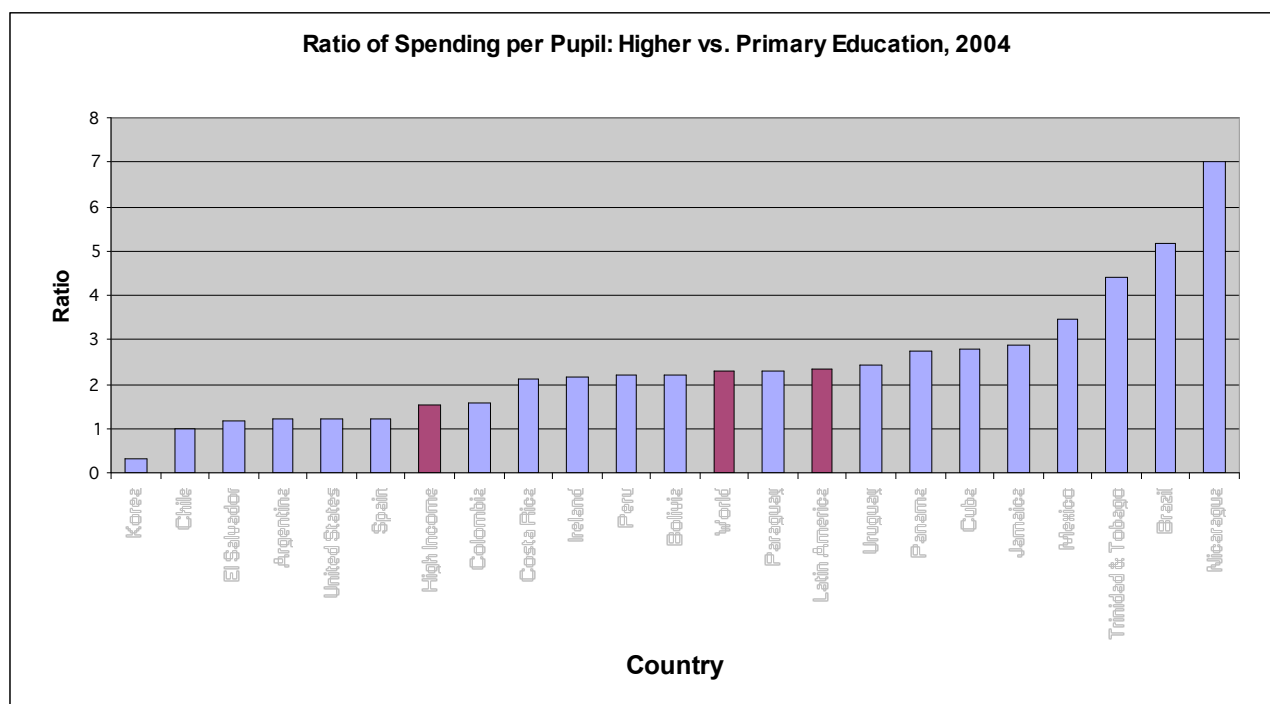


Note: Data for public current expenditure per pupil are expressed in constant 2002 dollar purchasing power parity (\$PPP).

Source: UNESCO, 2005.

Spending is also inefficient. Primary and secondary repetition (which costs the region over \$11 billion a year, according to UNESCO estimates), spending on absent or poorly performing teachers, and a lack of information on which policy interventions are most effective keep countries from getting the best returns from their investment. Furthermore, Latin American governments still spend on average more than three times as much per student at the university level than at the primary level, and in Nicaragua and Brazil the ratio is much higher (Figure 7).<sup>2</sup> Because much of government expenditure on tertiary education goes to subsidize the tuition of the rich (who would pay university tuition were subsidies not available) at the expense of the poor (who seldom finish secondary school) one can argue that such high ratios soak up public funds that might be better spent improving primary and secondary education for the poor.

**Figure 7. Ratio of Spending per Pupil: Higher vs. Primary Education, 2004**



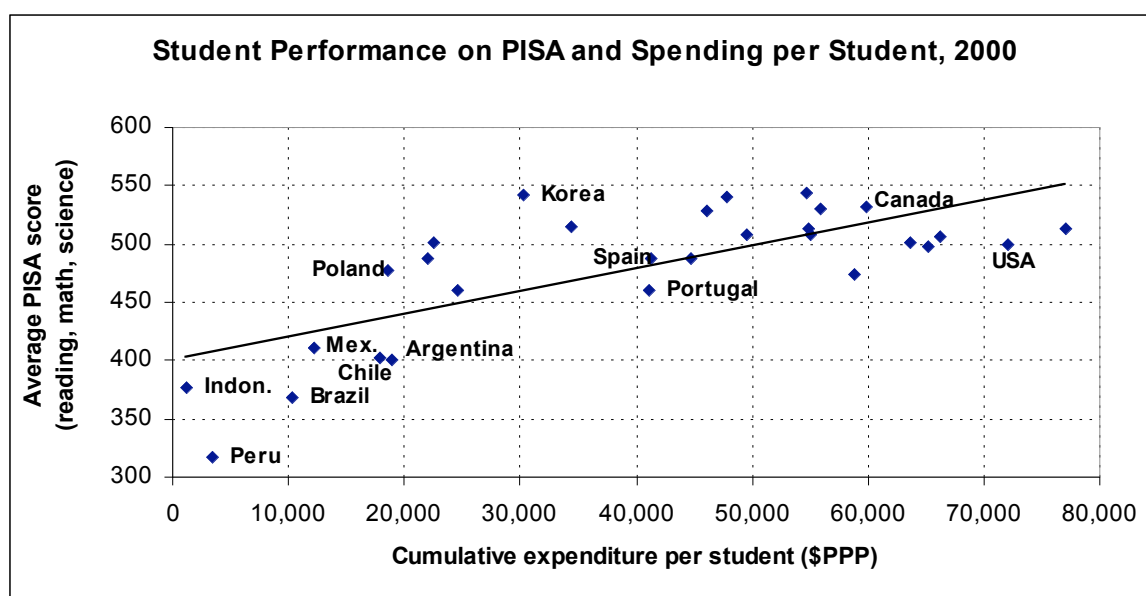
Note: All data most recent year within two years of date listed.

Source: PREAL calculations based on data from World Bank, 2006a and Edstats online database, June 2006.

Brazil, Nicaragua, Trinidad & Tobago from World Bank 2005b.

Perhaps not surprisingly, each of the five Latin American countries that participated in the 2000 PISA exam had learning scores below what would be expected given their level of per student investment (Figure 8).

**Figure 8. Student Performance on PISA and Spending per Student, 2000**



Note: Scores reflect average student performance across the three assessment areas. Expenditure is expressed in US dollars using purchasing power parities (\$PPP).



*Source: OECD/UNESCO-UIS, 2003, adapted from Figure 3.7b, p.113.*

### ***Principal Challenges***

Latin America faces four major barriers to making education a more effective tool in improving competitiveness—quality, equity, science and technology, and teachers.

#### **Quality: More education has not led to more learning.**

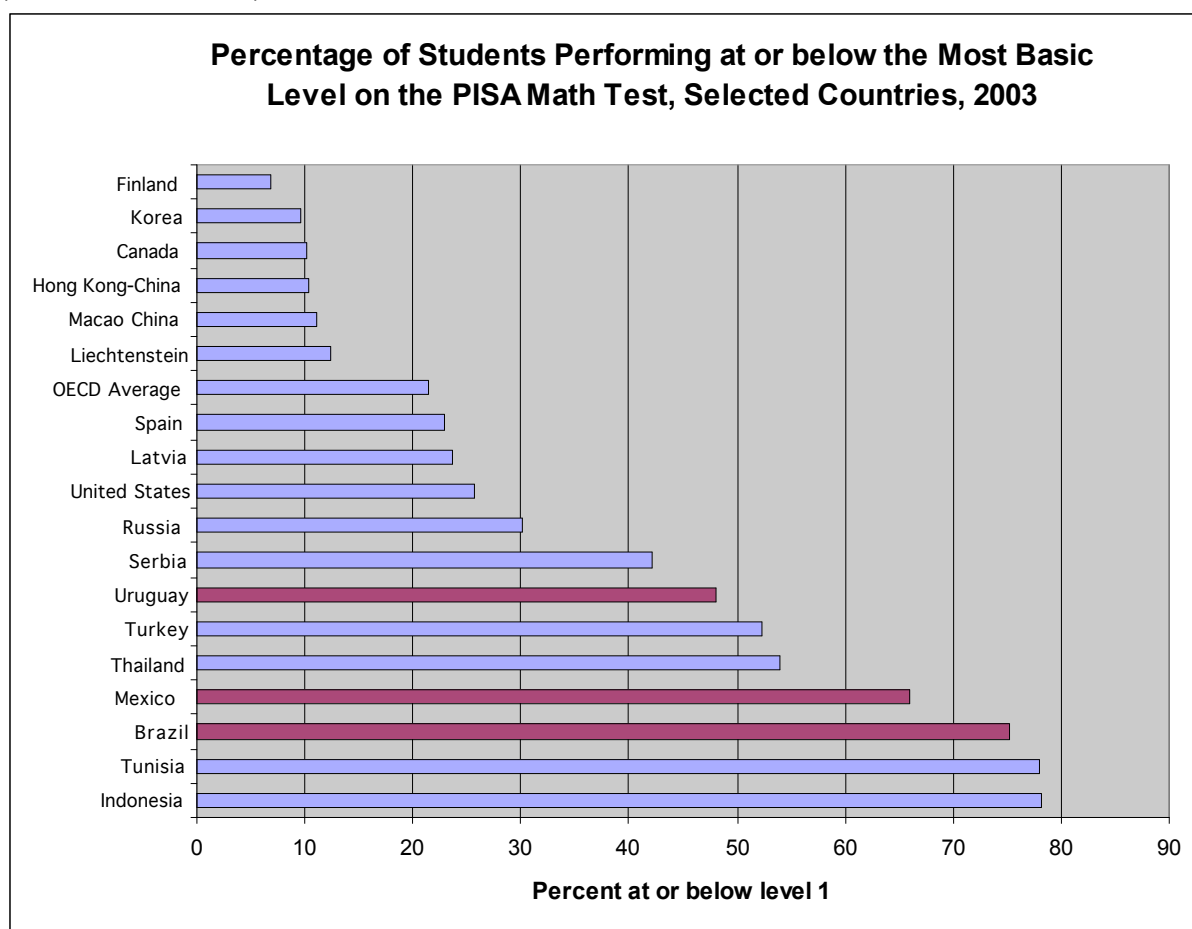
Despite progress in increasing enrollments and spending, the quality of education that most children receive is strikingly low. Latin American students perform poorly on national and international tests, and even the best Latin American students tested often score only as well as the “average” student in the most competitive economies. The evidence is disheartening, especially given the importance of education quality for growth.<sup>3</sup>

##### *Basic education*

Since 1995, only eight Latin American countries have participated in a major global achievement test. In every case they have scored well below the international average and near the bottom among participating countries. The results are striking for a number of reasons.

First, they show that Latin American students have serious deficiencies in the basic math and reading skills needed in today’s world. For example, in the 2003 Program for International Student Assessment (PISA) exam, roughly half the 15-year-olds in the three participating Latin American countries (Brazil, Mexico, and Uruguay) had serious difficulties in using reading as a tool for further learning, analyzing problems or building new skills. A majority (three-fourths in Brazil, two-thirds in Mexico, and nearly half in Uruguay) could not consistently apply basic mathematical skills to understand an everyday situation (Figure 9). This has obvious ramifications for the region’s competitiveness in comparison with advanced economies, especially when one considers that only about 20 percent of students in Organization for Economic Cooperation and Development (OECD) countries showed similar deficiencies.<sup>4</sup> Indeed, when business executives in 117 countries were asked to rate whether education in their country meets the needs of a competitive economy, only one Latin American country (Costa Rica, ranked 39th) scored above average, and ten ranked outside the top 100 (Lopez-Claros, et. al., 2005).

**Figure 9. Percentage of Students Performing at or below the Most Basic Level on the PISA Math Test, Selected Countries, 2003**



Note: Data shows student performing at or below level 1 on the combined mathematics scale and includes all participating non-OECD countries, USA, Canada, Mexico, Spain and top two OECD scorers.)

Source: Based on data from OECD, 2004, Table 2.5a, p. 354.

Second, the low performance is not limited to students from disadvantaged backgrounds. The 2000 and 2003 PISA tests show that with few exceptions, even the most affluent Latin American students tested scored at or below the OECD average, and well below the top students in other regions (IDB, 2006, pp.17-18). Likewise, the best Chilean students scored below the *average* for students in such top performers as Singapore and Korea on the most recent Trends in International Mathematics and Science Study (TIMSS).

Third, Latin American students do poorly, even when compared with countries similar GDP per capita. For example, only the top 25 percent of Chilean eighth-graders scored at the *average* level for countries with similar levels of development (e.g. Russia, Latvia, Malaysia) on the 2003 TIMSS test.

Scores on national achievement tests are similarly disturbing, and there is little sign of improvement.

*Tertiary*

Unfortunately, there is little hard data available on the quality of tertiary education in Latin America. Universities are generally independent and accountable to no one. Although many countries are beginning to put in place systems to accredit university programs (Figure 10)<sup>5</sup>, in general these are still in the initial stages and have been slow to take effect (Fernández Lamarra, 2006)<sup>6</sup>. Few countries systematically monitor graduates level of learning. Brazil is an important exception. It has been evaluating university graduates, under various systems, since 1995. Two of the region's largest universities, Universidad Nacional Autónoma (UNAM) in Mexico and Universidad de Buenos Aires in Argentina refuse to seek national accreditation or submit to external evaluation (Oppenheimer, 2005).

#### **Figure 10. Monitoring the quality of tertiary education through accreditation**

Several countries have established independent national accreditation agencies in an effort ensure university quality. These agencies evaluate higher education programs using a variety of techniques from external peer review, quantitative performance indicators, and student assessment. For example:

##### **National Commission for Evaluation and University Accreditation- Argentina**

Created in 1995, CONEAU attempts to provide a centralized and uniform system for university quality control. The Commission has a significant role in providing new public and private institutions with legal status and in monitoring private institutions. It accredits both undergraduate and graduate programs and institutions.

##### **Inter-Institutional Committees for Evaluation of Higher Education- Mexico**

This program is part of the quality assurance and accreditation system in Mexico that was initiated in the 1990s. The system is operated by various accreditation committees based on academic subject. At the national level, accreditation has been effective in regulating the quality of individual university programs (*carreras*) and in defining core curriculum. Participation in evaluation and accreditation is voluntary. Nevertheless, some evaluation committees offer additional funding as an incentive to participate in accreditation programs.

##### **Regional Initiatives to Monitor University Quality**

Latin America has also been experimenting with regional initiatives to guarantee the quality of university programs. For example, MERCOSUR has put in place the *Mecanismo Experimental de Acreditación de Carreras (MEXA)* and Central America has created the *Consejo Centroamericano de Acreditación (CCA)* as joint efforts to certify the quality of university programs.

Sources: Holm-Nielsen, et. al, 2005, Fernández Lamarra, 2006, and

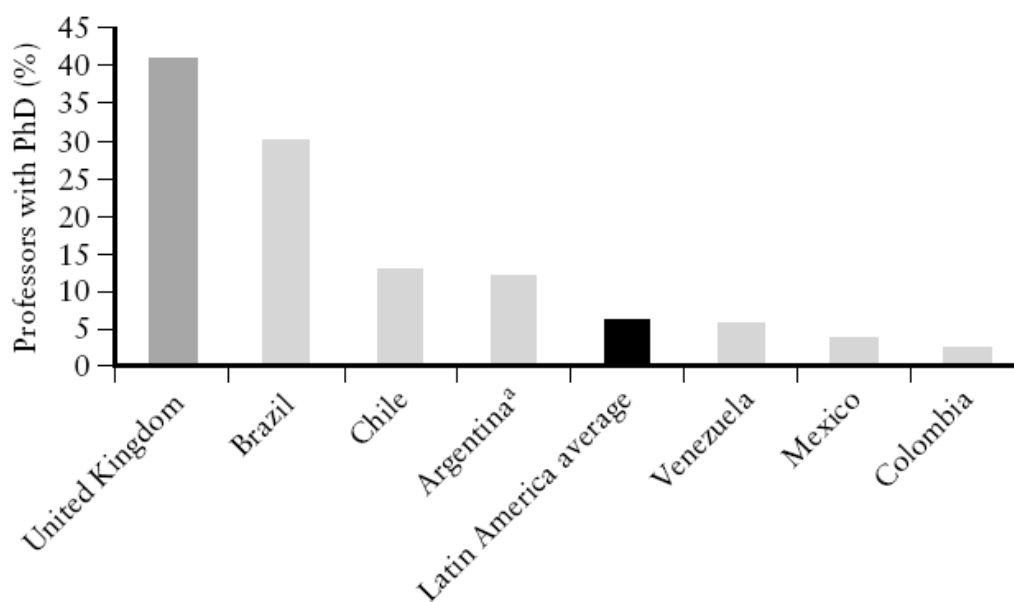
[http://www.anuiex.mx/e\\_proyectos/pdf/06\\_La\\_internac\\_de\\_la\\_educ\\_sup\\_en\\_Mex\\_Silvie\\_Didou.pdf](http://www.anuiex.mx/e_proyectos/pdf/06_La_internac_de_la_educ_sup_en_Mex_Silvie_Didou.pdf)

Still, existing evidence suggests that the region's universities are not of globally competitive quality. In a 2005 ranking of the world's 500 universities, no Latin American university ranked in the top 100, and only two (University of Sao Paulo in Brazil and Universidad Nacional Autónoma in Mexico) ranked in the top 202 (Shanghai Jiao Tong University, 2005).<sup>7</sup> In total, only seven Latin American universities made the top 500, four of them from Brazil. By comparison, South Korea had eight universities in the top 500, China had seven (excluding Hong Kong and Taiwan), Hong Kong and Taiwan had five and South Africa had four.

Many university professors in the region do not have masters or doctoral degrees, and the majority work at the university only part-time.<sup>8</sup> On average, fewer than 1 in 10 Latin American professors have a PhD (Figure 11). In Colombia and Mexico less than 4 percent do. Brazil, where 30 percent of professors hold doctorates, does much better, but is still below the average for more advanced economies. Less than 26 percent of professors in the region hold master's degrees (Holm-Nielsen, et. al., 2005, citing García Guadilla, C. 1998. *Situación y principales*

*dinámicas de transformación de la educación superior en América Latina*. CRESALC/ UNESCO, Caracas).

**Figure 11. Percentage of Professors with Doctoral Degrees in Selected Countries, 2001**



Note: Argentina includes public universities only.

Source: Holm-Nielsen, et.al., 2005, p.49, citing data from World Bank. 2002. *Bolivarian Republic of Venezuela: Higher Education Sector Profile*. Washington, DC.

In addition, issues of overcrowding, deteriorating physical facilities, lack of equipment, obsolete instruction material, outdated curricula, and the need to provide remedial instruction to compensate for poor quality primary and secondary instruction, undermine universities' ability to provide high quality education (Holm-Nielson, et. al., 2004, citing Brunner, José Joaquín. 2002. *Aseguramiento de la calidad y nuevas demandas sobre la educación superior en América Latina*. Consejo Nacional de Acreditación, Cartagena.). Links between universities and the private sector are weak, undermining national research and development capacities.

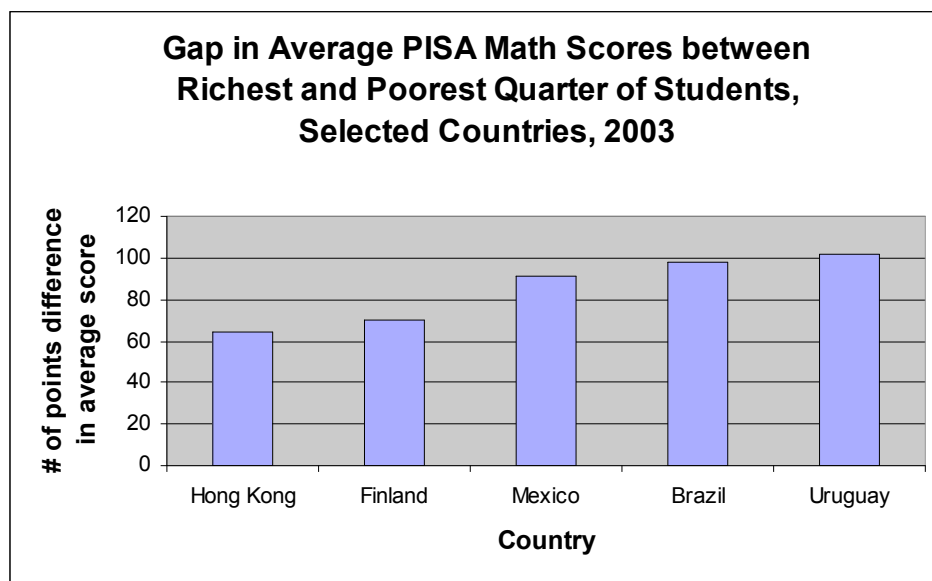
### **Equity: Poor and minority children learn less and leave school earlier than their better-off peers**

Latin America is the most unequal region in the world. Its combination of high inequality and poverty seriously inhibits economic growth. Since education is the most important productive asset that most people will ever own, the region's unequal distribution of quality education is a major constraint on the region's competitiveness. Rampant inequality leaves many poor, rural and indigenous individuals without the tools they need to be successful economically, socially and as citizens—under-utilizing large portions of the potential labor force and adding to social tension.

A greater percentage of the poor are starting primary school than ever before, particularly in Brazil, Costa Rica, Ecuador, El Salvador and Venezuela (PREAL, 2005, Table A.12, based on information from World Bank, 2004). However, children from poor families routinely score

much lower on tests and leave school sooner than those from better-off families. For example, students from poorer families in Brazil, Uruguay, and Mexico scored between one and two proficiency levels lower than those from higher income families on the 2003 PISA math exam (Figure 12). The results of the 2000 PISA exam in reading showed similar difference in learning among rich and poor children from Argentina, Brazil, Chile, Mexico and Peru.

**Figure 12. Gap in Average PISA Math Scores between Richest and Poorest Quarter of Students, Selected Countries, 2003**

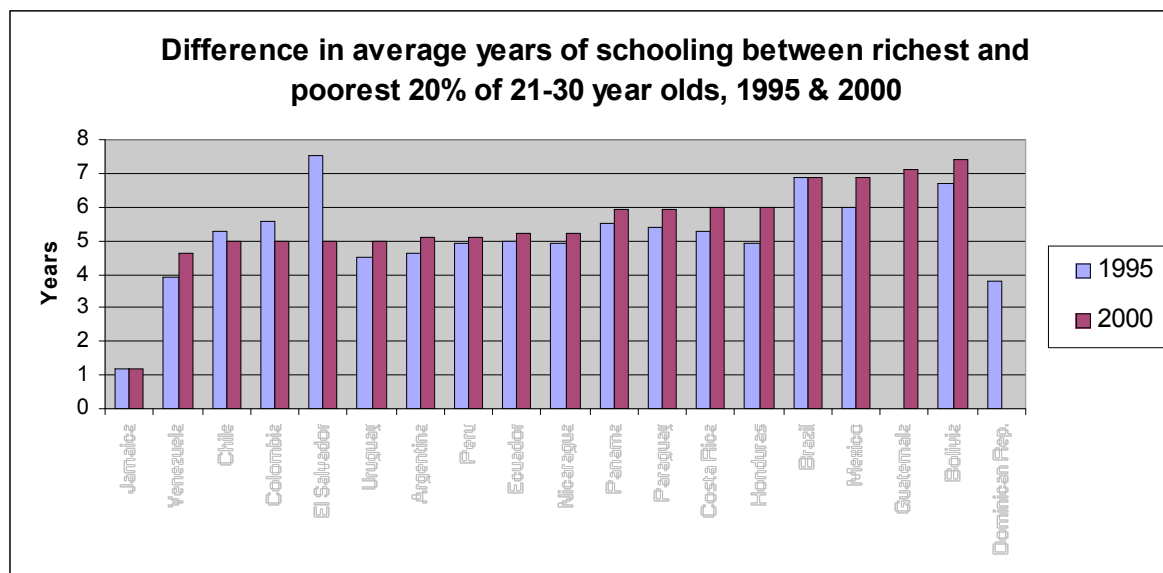


Note: Data show the number of points' difference in average scores of students in the top and bottom quarters of the PISA index of economic, social, and cultural status. OECD data include all Latin American countries, plus two top-scoring OECD countries. Each proficiency level spans approximately a 60-point range.

Source: Based on data from OECD, 2004, *Learning for Tomorrow's World*, Table 4.4, p. 399.

With the exception of Jamaica, the wealthiest fifth of 21-30 year-olds gets five to seven more years of schooling than the poorest fifth. In most countries, the gap has either remained the same or gotten worse (Figure 13).

**Figure 13. Difference in Average Years of Schooling between Riches and Poorest 20% of 21 to 30-year olds, 1995 and 2000.**



Note: Data are for the most recent year within two years of the date listed.

Source: Based on data from World Bank, 2004, Table A.23.

Indigenous and Afro-Latin children are also at a disadvantage. They are less likely than their peers to complete primary school or to enroll in secondary school. For example, in Paraguay enrollment rates for Guaraní-only speakers fall from 93 percent for primary school aged students to 47 percent for those in the secondary-age group, a decline of 46 points. For Spanish-speakers the fall is less than half that amount (19 percentage points) (IDB, 2006). They also tend to score below their white peers on achievement tests. However, racial/ethnic gaps, at least in terms of literacy and primary enrollment, do seem to be lessening (Winkler and Cueto, 2004).

### **Skills in technology, math, science and English all lag behind**

Latin American schools do a poor job of providing the more specific skills necessary to be competitive. Even those who achieve basic competency in reading and math are unlikely to acquire the advanced math, science, technology and English skills that allow countries to innovate and attract foreign investment.

#### *Science and Technology*

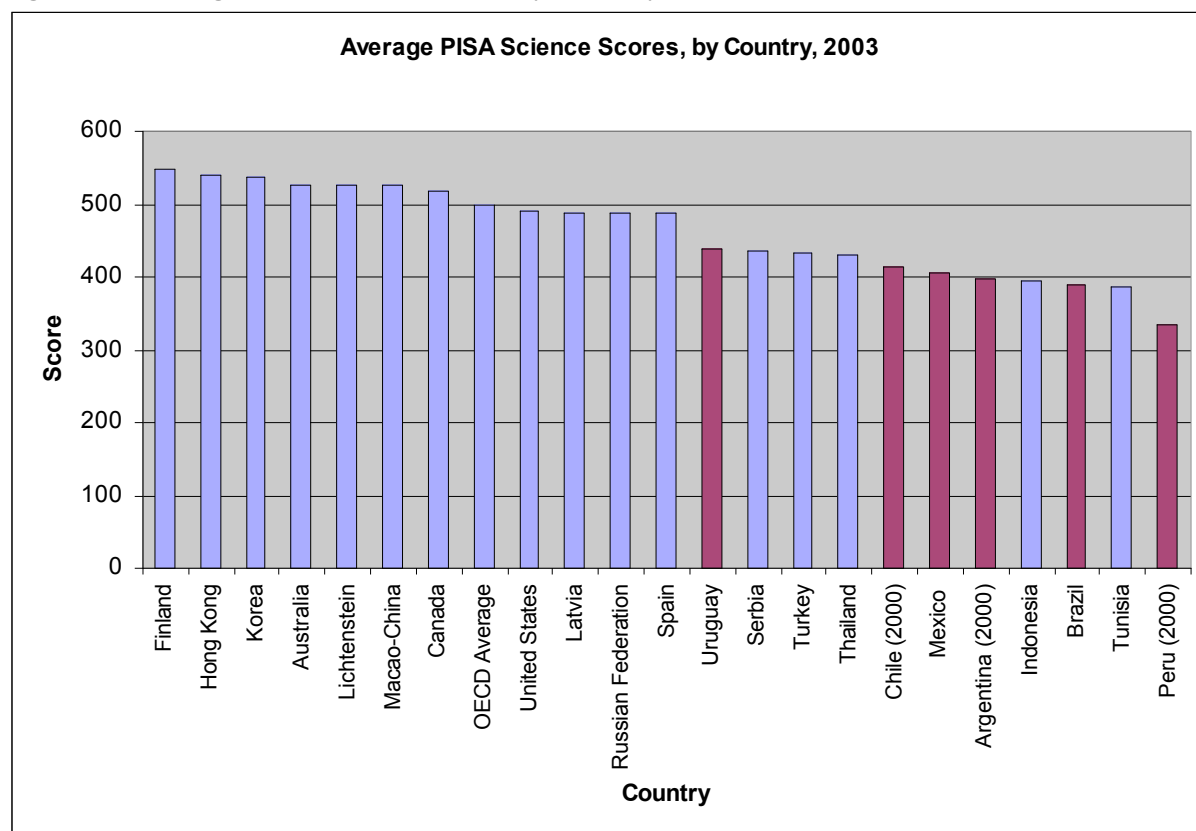
Evidence suggests that Latin American children, and especially poor children, lag behind in acquiring computer and other technology skills. For example, 13 percent of Mexican students and 4 percent of Uruguayan students who took the PISA test had never used a computer compared to the OECD average 1.7 percent. Among the poor the rate of those never having used a computer rises to 29 percent in Mexico and 10 percent in Uruguay. Only around 6 in 10 Mexican students and 7 in 10 Uruguayan students report that they can create/edit a document or move files from one place to another on a computer without help. This is less than the average for OECD countries, Latvia and Russia (whose GDP per capita are similar to Latin America), although higher than in Thailand.<sup>9</sup>

In addition, international test scores suggest that very few secondary students in Latin America have a strong foundation in math and science. Few students participating in the PISA 2003 math test performed at internationally competitive levels (IDB, 2006).<sup>10</sup> Only 1 percent of Uruguayan students, the region's best performer, scored at the highest level in math, compared with 7-8 percent in Korea and Finland and 11 percent in Hong Kong (OECD, 2004). In science,

average scores for Latin American students were also below those of countries with similar levels of income, and well below the OECD mean (Figure 14).

Business leaders in the region also give the quality of math and science education in their countries low marks when asked to rate whether it lags far behind most other countries (a score of 1) or is among best in world (a score of 7). Costa Rica, with a score of 4, was the highest-ranked Latin American country (66<sup>th</sup> of 117 participating countries). Fifteen countries scored below 3.5. The Dominican Republic, Guatemala, and Honduras ranked in last three spots, with a score of 2.3.

**Figure 14. Average PISA Science Scores, by Country, 2003**

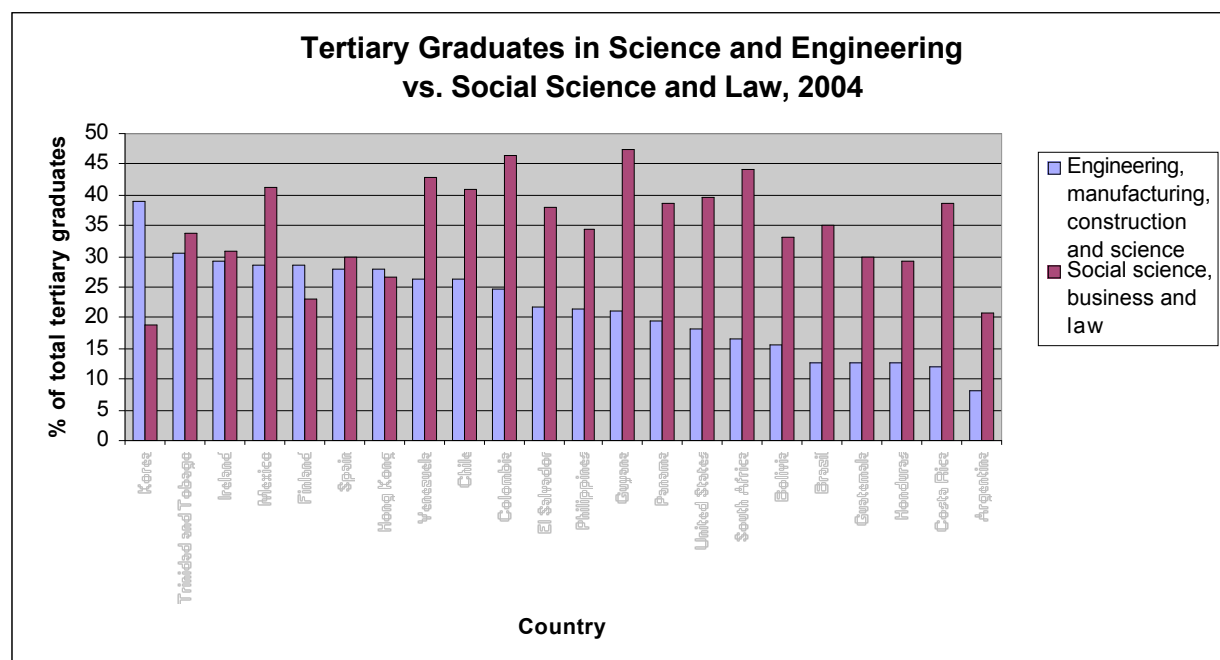


Note: Detailed proficiency levels for science will not be available until the 2006 test. However a score close to 400 indicates that students can generally recall only simple factual knowledge and use it to draw conclusions. Test scores for Chile, Argentina and Peru are from the 2000 PISA science exam.

Source: OECD, 2004 and OECD/UNESCO, 2003.

At the tertiary level, the region produces very few science or engineering graduates. The bulk of university graduates study social science, law, or business. In most countries, less than a quarter receive science or engineering degrees. By contrast, nearly 40 percent of all Korean university graduates, and nearly 30 percent of all Irish and Finnish graduates are trained in science or engineering. In Latin America, only Mexico has similar rates (Figure 15). Not surprisingly, when business executives in 117 countries were asked to rank the availability of scientists and engineers in their country, no Latin American country scored in the top 50, and only five scored above the mean (Argentina, Costa Rica, Chile and Venezuela) (Lopez-Claros, et.al., 2005).

**Figure 15. Tertiary Graduates in Science and Engineering vs. Social Science and Law, 2004**



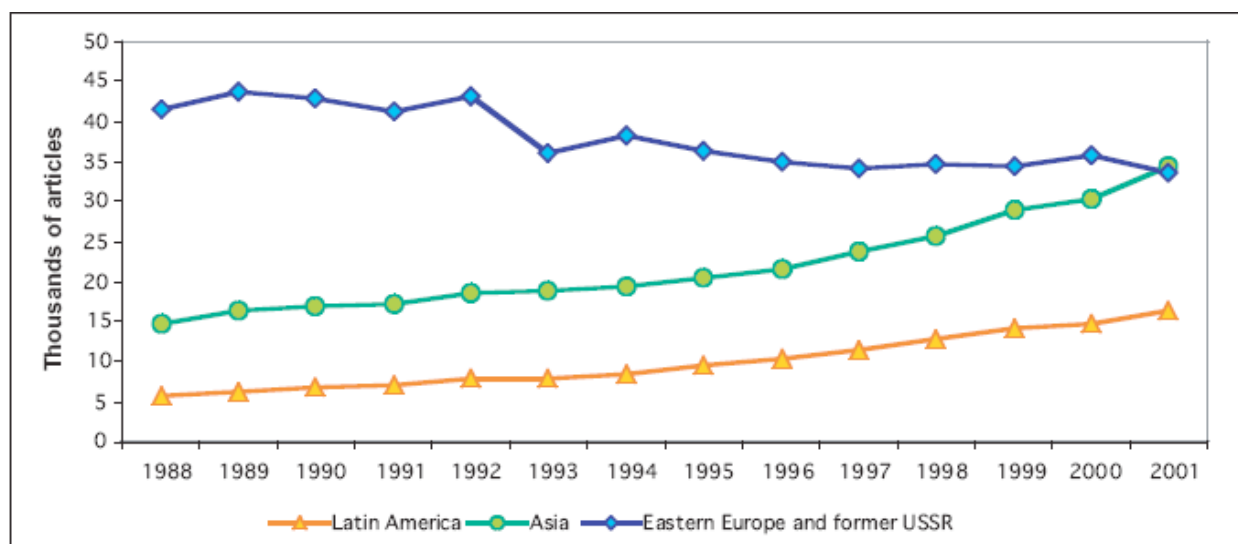
Note: All data within two years of date listed, except Argentina (2001), Bolivia (2000), and Venezuela (2000).  
Source: World Bank, Edstats online database, June 2006.

Latin America's scientific output is also low compared to other regions, both in terms of scientific and engineering articles and patents granted (Figures 16 and 17).

**Figure 16. Scientific and Engineering Article Output of Emerging and Developing Countries by Region, 1988-2001**

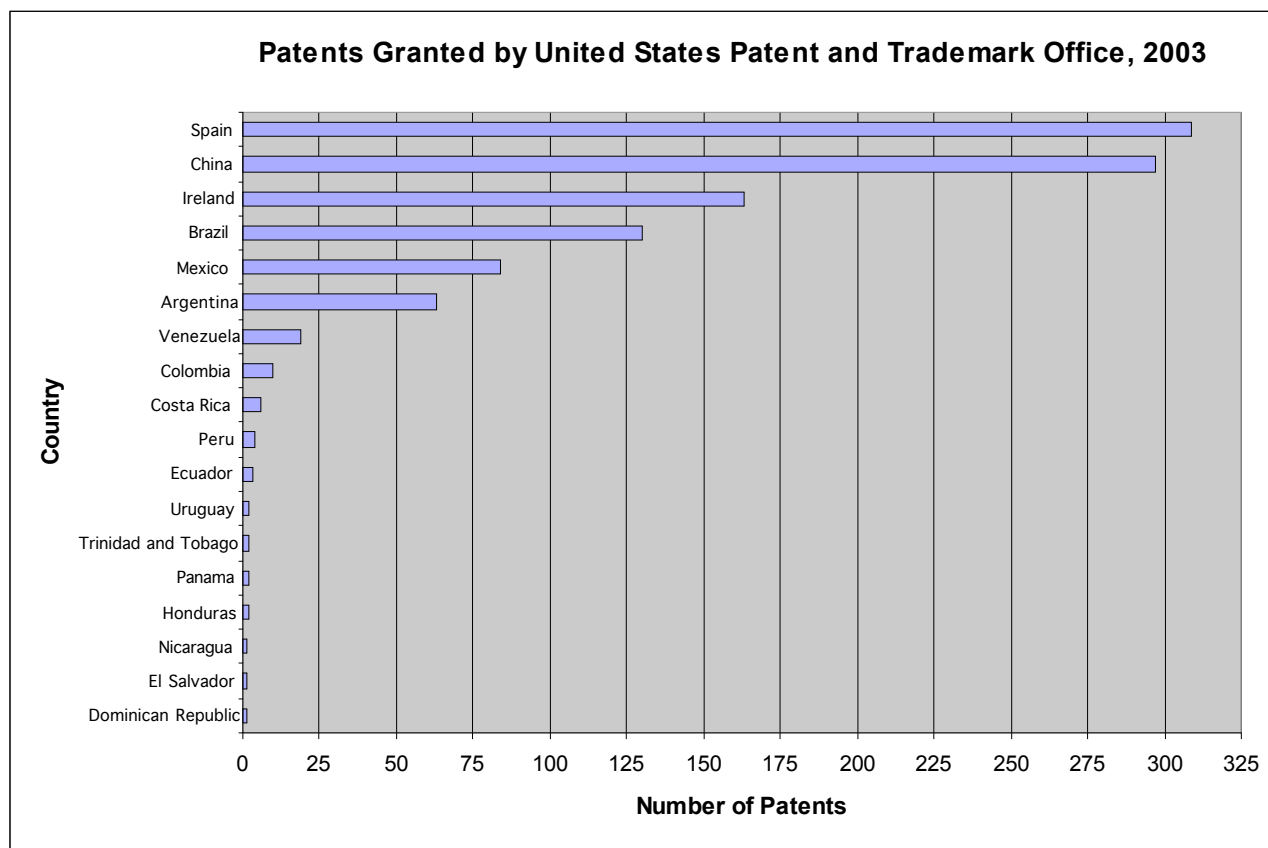


NOTE: This extract is taken from the author's original manuscript and has not been reviewed or edited. The definitive version of this extract may be found in the work *Can Latin America Compete?: confronting the challenges of globalization* edited by Jerry Haar and John Price, which can be purchased from <http://www.palgrave-usa.com/catalog/product.aspx?isbn=1403975434>.



Source: IDB, 2006, graph B.3.2.b.

**Figure 17. Patents Granted by United States Patent and Trademark Office, 2003**



Note: Most recent year within two years of date listed.

Source: IDB, 2006, Table B.3.

### *English-language skills*

For good or ill, fluency in English is an important asset for competitiveness. It is the primary language of international business, web content, and publication of cutting-edge research. And for Latin America, it is the language of operation of a major trading partner and neighbor. English-language call centers, tourism and other services, have the potential to provide a significant source of income and jobs. Not surprisingly, more countries are placing English (or at least some second language) on the list of fundamental skills students should develop (Figure 18).

#### **Figure 18. New Programs to Promote English in Latin America**

Some countries in the region are actively promoting English education programs as a tool for competitiveness and development of human capital. For example:

##### **English for Life- Panama**

Initiated in 2005 as a result of a joint effort of the government and the private sector, English for Life is designed to mitigate unemployment by giving people the English training they need to work effectively in call centers, ports and tourist services. During the first stage of the program, 2500 received training. The second phase, referred to as the “Genuine English Program,” targets 2500 students who will learn English three hours a day for eight months. Five hundred teachers and professors will also receive training to improve their teaching skills.

##### **National Bilingual Program (PNB) 2004-2019- Colombia**

This program takes the Common European Framework as a point of reference to strengthen national competitiveness, and seeks cooperation from the private sector to make the program stronger. All students graduating from middle school must acquire basic written and oral English skills. Students graduating from high school are expected to grasp the main ideas in complex texts, speak English with native speakers, and write clear argumentative essays. The program also will establish English training from the pre-school level, starting by improving the English skills of pre-school teachers. In addition, Colombia has been cooperating with Jamaica and Brazil, both of which are interested in designing language immersion programs, sharing best practices, promoting joint practices, creating a reward system for papers by students written in either Spanish or English, and improving the English fluency of university graduates in cooperation with Colombia.

##### **English Opens Doors (EOD) - Chile**

This program, initiated in 2003, will test English language skills against clear standards of progress in schools nationwide. Starting in 2004, the program makes English mandatory beginning in 5<sup>th</sup> grade, and the Ministry of Education provides free course books for every 5<sup>th</sup> and 6<sup>th</sup> grader in the country. The program emphasizes the development of reading and listening skills and by 2010 hopes to have all 8<sup>th</sup> graders pass a standardized international proficiency test in English in order to be promoted to the next grade. For Chile, a major focus is on making sure that the instructors are prepared to effectively teach English. Instructors are expected to reach a minimum level of English proficiency by 2011. EOD advances teachers’ professional development to promote better teaching practices. Various grants and training sessions as well as an “English Summer Town” are offered to teachers. The country has also established a database with the names and contact information for over 12,000 bilingual or nearly bilingual individuals (based on proficiency test scores) available to any businesses wanting to establish offices in Chile.

Sources: For Panama, “English for Life: Star Contact in our Community” (<http://www.star-contact.com/about/news.html>) and “Capicitarán estudiantes en inglés” (<http://mensual.prensa.com/mensual/contenido/2005/07/25/hoy/negocios/287624.html>). For Colombia, Newsletter of the Ministry of Education: *Al Tablero*, No. 37. “Bilingual Colombia”, October-December 2005. For Chile, Oppenheimer 2005, Seminar: “Chile avanza aprendiendo inglés” ([http://www.mineduc.cl/biblio/documento/779\\_SEMINARIO\\_CHILE\\_AVANZA\\_APRENDIENDO\\_INGLES.doc](http://www.mineduc.cl/biblio/documento/779_SEMINARIO_CHILE_AVANZA_APRENDIENDO_INGLES.doc)), and “Programa Inglés Abre Puertas” (<http://www.ingles.mineduc.cl>).

But few studies track how many people speak English in any given country or their level of proficiency. In Chile official studies suggest that only 2 percent of the population can read and speak English at a basic level (Oppenheimer, 2005). And the region has given English less priority than East Asian competitors. Most Latin American English classes start in 7<sup>th</sup> grade with

two hours of instruction per week. Meanwhile in Singapore, Thailand and Malaysia English instruction starts in 1<sup>st</sup> grade and in China and Korea it starts in 3<sup>rd</sup>. Chinese students meet four hours a week (not including private instruction outside school hours), and Singaporean students meet for eight hours each week (ibid.).

### **Teaching is in crisis**

Perhaps no other single area presents as great a challenge for improving education in Latin America as strengthening the teaching profession. On the one hand, teachers face enormous challenges—ranging from poor training, lack of classroom resources and administrative support and low social prestige—that make it difficult for them to do their jobs well. On the other, education management systems lack incentives to attract and retain high quality teachers and mechanisms to remove those who continue perform poorly after a reasonable effort has been made to help them improve. To make matters worse, governments and teachers unions generally view each other as adversaries, rather than partners in educating children.

Most studies suggest that a large share of Latin America's teaching corps is ill-equipped to provide globally competitive education to all students. Teachers seldom represent the best and brightest of their generation. Many have lower academic grades than their peers and have chosen teaching more as a last resort for getting into college than as a true vocation (Rama and Navarro, 2004).<sup>11</sup> Poor children, who need high-quality teachers the most, generally get the teachers with the least training and experience. For example, states in Brazil's high-poverty Northeast have the lowest proportions of trained teachers (UNESCO, 2004). In Bolivia, rural teachers are twice as likely as urban teachers to lack full training and are more likely to abandon teaching (Vegas and Umansky, 2005).

To date, governments have concentrated principally on improving teacher skills through better pre-service training and professional development (Figure 19). In most countries pre-service programs are now provided at the tertiary level.<sup>12</sup> Several countries are creating mechanisms for teachers to learn from each other, incorporating active learning strategies and classroom follow-up into teacher education, and experimenting with ways to reach teachers and potential teachers in rural areas. However, several challenges remain. Teacher training is often disconnected from classroom needs and other elements of the education system (standards, tests, curriculum, etc.), and so far there is little evidence that training or teacher credentials have significant impact on teacher performance or student learning. The quality of training programs varies widely, and only a few countries accredit schools of education or test their graduates as a condition for employment.

#### **Figure 19. Innovations in Teacher Training**

Recognizing the weaknesses of existing teacher training programs, many countries are working to make them better. Two innovative practices in the region include the following:

##### **ESTIPAC- Mexico**

The Rural Center for Higher Education-ESTIPAC program offers pre-service training to students from rural areas who will return as teachers to their home communities. Students come from all over the country, and approximately 20% are of indigenous descent. The program is based in Jalisco and is supported by private contributions. The center has been offering higher-level academic programs for rural primary and secondary school teachers for more than 20 years. Students in this program develop strategies for coping with the difficulties of rural life that affect their students. The program also provides academic teaching and leadership skills for economic and community development in rural areas.

### New Model for Teacher Training in Central America

This project, initiated in 2005, seeks to establish a common sub-regional model for pre-service and in-service teacher training and for teacher evaluation against common standards. A joint effort of the Organization of American States and the Ministry of Education in El Salvador, the project aims to create a core of qualified and effective teachers in different subject areas in line with the education improvement policies of the six participating Central American countries. Through online forums, publications, and regional seminars, the project will provide opportunities for sharing best practices in the region and on-going professional development.

Sources: From PREAL 2005, based on information from Vaillant, 2004 and [http://www.edured.gob.sv/formaciondocente/Pagina\\_Principal.asp](http://www.edured.gob.sv/formaciondocente/Pagina_Principal.asp). For more innovations in training see Andraca, 2003.

The bigger challenge, however, is that systems for managing teachers don't promote professionalism. Among the major limitations:

- Teacher performance is rarely evaluated. Most teachers in the public sector are not accountable to anyone—principals, parents, or governments. Few countries regularly monitor teacher attendance or how much time they spent on classroom instruction (vs. discipline, administrative and other tasks), let alone how well they are teaching. (See Figure 20 for a recent effort.) In general, teacher unions are opposed to reforms designed to evaluate performance, impeding effective implementation. In Mexico, for example, evaluation is voluntary and has no negative consequences. In Chile, union leaders have refused to implement a relatively weak system of evaluation they agreed to in 2004. Only a few other countries are even considering establishing teacher evaluation systems (Schulmeyer, 2004).

### Figure 20. Evaluating Teacher Performance in Colombia

In 2003, Colombia designed and implemented a performance evaluation system designed to improve the quality of teaching and learning. By law, teachers, school directors, academic coordinators, and school counselors (*orientadores escolares*) are to be evaluated in 14 teaching skill areas including innovation, commitment to the school, knowledge of the school's education improvement plan, and conflict resolution. Teachers are graded on a 1–6 scale by the school principal, based on classroom observations, planning documents, class diaries, and an interview. The assessment is then used to develop a formal plan for improvement in areas judged deficient. The law provides for a voluntary pilot application in 2003 to familiarize teachers and administrators with the system (which was carried out), followed by mandatory participation in subsequent years. Future applications will influence incentives for professional development as well as decisions on sanctions for poor performance.

Source: From PREAL, 2005, based on information from Colombian Ministry of Education, "Manual de la Evaluación de Desempeño de Docentes y Directivos Docentes," [www.mineducacion.gov.co/documentos/Manual\\_Evaluacion\\_Docente.pdf](http://www.mineducacion.gov.co/documentos/Manual_Evaluacion_Docente.pdf).

- Pay is unrelated to performance. The issues surrounding teacher salaries are controversial and complex. However, one thing is clear—compensation systems are not producing the kind of teaching excellence the region needs. Part of the problem is that teachers' earnings are almost entirely determined by factors other than how well they do their jobs. Teaching excellence is seldom rewarded, or even acknowledged, and dismissing a teacher for poor performance is nearly impossible. Mediocre teachers, and those who don't show up, are paid the same as outstanding educators who give 110 percent every day.

To confront these issues, a few countries have experimented with a variety of incentive systems (including linking pay to performance), with mixed results.<sup>13</sup> On the one hand, evidence suggests that incentives can make a difference in attracting, retaining and motivating high quality teachers, and affect their behavior in the classroom. On the

other, deficiencies in the design and implementation of existing teacher incentives reforms limit their effectiveness and sometimes lead to unintended outcomes. Such mixed results suggest that while effective incentives linked to performance may be a necessary part of improving teaching and learning, they may not be sufficient without complementary measures in other aspects of education policy and careful implementation (Vegas and Umansky, 2005). Given the small number of performance-based experiments underway in the region, it is also likely that countries have not yet found the right mix of incentives and further (well-documented) trial and error will be necessary.

- Non-monetary performance incentives are few. Performance incentives that are common in other occupations—such as clear standards regarding what they should do and achieve; job security in return for good performance; social prestige and recognition; opportunities for professional growth, including a career advancement ladder and treatment as a competent professional; and having to satisfy clients or a supervisor—are largely absent from teaching in Latin America. Teachers seldom receive the support they need to diagnose problems and upgrade their skills and are widely regarded as having low prestige.

There are signs of progress, however. For example, El Salvador has revised its teacher statute, nearly doubled teachers' monthly salary, and is screening teacher candidates for academic levels. The new Colombian teachers' statute includes objective teacher selection criteria, teacher evaluations, and salary increments based in part on performance.

In addition to training and management challenges, significant, ongoing tension between governments and teacher unions holds back improvements to education. On the one hand, teacher unions feel under-appreciated. They argue that governments, as teachers' employers, are failing to hold up their end of the education partnership. Teachers are not consulted regarding reforms, have little say in how schools are run, and often get little support in the most basic elements of their job (for example, in-service training and supervision, lesson planning, and teaching materials). For their part, governments argue that teacher unions are only concerned with salary and job stability, and unwilling to accept some share of responsibility for guaranteeing education quality. Such adversarial relations come at students' expense, both in terms of quality and days lost to strikes.

The good news is that in a few countries coalitions of actors, including teacher unions, have begun to come together to talk about national plans for improving education quality and strengthening the teaching profession. And, if experiences in Chile and Mexico are any indication, the ideas of pay for performance and teacher evaluation may be gaining ground among individual teachers and unions.

Overcoming these four major barriers to making education a more effective tool in improving competitiveness is particularly difficult given the political context in which reforms must be adopted and implemented.

Leaders seeking to make tough decisions to date have had few allies. Information on school performance is often limited in scope, unreliable, out-of-date, not readily accessible and not user-friendly. As a result, most education stakeholders (parents, employers, politicians, the media, and civil society leaders) are unaware of deficiencies in their public schools, and so are not motivated to press for change.

Few programs monitor the effectiveness of particular interventions, leaving policy too dependent on guesswork or inertia. National capacity to formulate policy, assess progress, and build agreement on solutions is generally weak. The analytical and communications skills necessary to identify, design, and evaluate good policy tend to be in short supply.



As a result, special interests (e.g. teachers unions and university students) opposing education reforms are strong, while demand for reform is weak. Special interests control information, defend privilege and resist reform at the expense of those most directly affected by school quality. Parents who send their children to public schools lack information and are overwhelmingly poor, relatively uneducated and not accustomed to playing a direct role in improving learning. Wealthier and better-educated parents send their children to private schools and so are not directly affected by—and worry less about—problems in the public system. Politics, and not just policy, hold back education progress in the region (Figure 21).

### **Figure 21. Politics and Public Schools**

Politics may be the biggest obstacle to improving education in Latin America today, and few governments have figured out how to deal with it.

The political challenges that reformers face are daunting. Governments have a virtual monopoly in designing and delivering public education. They face little competition and minimal oversight by civil society. The consumers of public education—most of them poor—have little information and almost no influence on education policy. Influential elites send their children to private schools and so do not endure the failings of public schools.

As a result public education is "captured" by interest groups—primarily teachers unions and universities—that are informed, well-organized, and can engage decision-makers. Governments, realizing they have few allies against these groups, tend to give in to their demands—leading to iron-clad job security for teachers regardless of performance, and free university tuition for the rich. The poor lack this kind of power. They seldom have a seat at the negotiating table and rarely take to the streets to protest poor school quality. Because they lose out to groups with more political muscle, their children are left with third-rate educations in under-funded and poorly managed public primary schools.

To be sure, governments have taken the politically popular decision to expand enrollments, thereby putting more poor children into school. But few have successfully tackled the politically difficult reforms that would improve the quality, equity and accountability of these schools—largely because powerful vested interests oppose them.<sup>1</sup>

This is largely a failure of leadership and lack of a strong demand for policy reform. As part of their strategy to confront political obstacles head-on, leaders from all sectors need to make demand stronger. Doing so requires three inputs: information, involvement and empowerment. Governments should inform the demand by providing consumers with reliable, timely and user-friendly information on the education system. They should involve the demand in the design and evaluation of reforms, giving them an ownership they are more likely to defend. And they should empower the demand by delegating significant decision-making authority, particularly over financial issues, to local entities where the consumers of public education can more easily participate. These steps will not guarantee success. But they will begin to tip the political balance away from the powerful groups that currently dominate education policy, and give the poor a better chance of having their interests served.

There have been a few successes. Nicaragua implemented in the early 1990's an innovative and ambitious program of school accountability and parental participation that public schools can choose to join. Championed by strong ministerial leadership—and with support from international organizations and donors—the Autonomous Schools Program established a system of school-based management, creating local school councils controlled by parents and responsible for hiring and firing principals and allocating resources derived in part from fees charged to parents.

Reformers bypassed unions—already weakened by divisions and infighting—by appealing directly to teachers with pay incentives tied to the autonomous project. Earlier changes in the education ministry bureaucracy and the establishment of municipal-level education ministry delegates also helped overcome political

<sup>1</sup> One can imagine political parties that, in the name of the poor, stand up to the special interests and demand the hard decisions needed to improve public schools. This seldom happens, perhaps because party leaders perceive that doing so will cause them more trouble than doing nothing—at least in the short term. And of course presidential leadership could energize state bureaucracies and party leaders, and craft political strategies for change. But presidents realize that unions and universities are strong and well-organized while the poor are not, making the political payoff smaller than the trouble that reform initiatives will bring.

barriers. At the macro-level, the program benefited from strong linkages with broader goals related to the process of democratization and market reforms that extended beyond the education system itself. By 2000, over 50 percent of primary school students and nearly 80 percent of secondary students were enrolled in autonomous schools. Initially implemented through ministerial directives, the success of the program helped the reform survive years of legislative battle later.<sup>2</sup>

*Source: Birdsall et. al , 2007 (forthcoming).*

### ***Education Fundamentals for Competitiveness***

Revamping education in ways that enhance competitiveness will take time. There are no quick fixes. Countries must commit themselves to fundamental changes in what schools produce and how they are managed. Success requires moving faster and thinking bigger. The most important changes necessary to prepare students for today's knowledge economy fall into two broad categories: (1) make learning the chief measure of education success, and (2) make schools accountable to citizens for achieving educational objectives.

### **Put Learning First**

In shaping education, countries need to shift away from their traditional focus on inputs—such as enrollments, spending, buildings and teachers—and towards the most important education output: what children learn. The idea here is not to ignore inputs, but rather to recognize that outputs, in the form of learning, are what justify the inputs. Countries therefore need to reorganize education systems to make sure the proper outputs are produced. Learning needs to be given top priority.

Putting learning first implies establishing clear learning standards. Countries need to decide what children should learn in each subject at each level. For primary schools, emphasis should be placed on mastering simple skills in reading, writing, and math. These are the building blocks of competitiveness; if they are not in place, nothing else will work. At the secondary level, more complex standards that emphasize science, technology and advanced math, can be phased in. Throughout, emphasis should be on understanding and applying subject matter rather than just memorizing it. And standards should include creativity, adaptability and self-discipline.

With growing globalization, competitiveness also requires learning a second language. Training in a second language should be offered as early as possible to all children, particularly those from poor families (who are least likely to have the opportunity to acquire a second language outside of school). English is the most logical option for most of Latin America. But consideration should be given as well to Chinese or other Asian languages.

Putting learning first also implies systematically measuring how much students learn. Countries should establish robust national (or regional) testing systems that regularly measure progress toward achieving learning standards. Ideally these tests should be administered annually to all children so as to monitor progress and identify problems. The tests need to be aligned with national learning standards, and based in institutions that are insulated from partisan politics. Test results should be disseminated to parents, teachers, employers and the general public in simple, user-friendly formats. They should be used systematically to adjust and improve education policy.

Countries should also experiment with simple diagnostic tests—at least in reading and math—that teachers can apply quickly several times a year to determine which of their students need special attention.

<sup>ii</sup> For more on Nicaragua's Autonomous Schools Program see Gershberg 2005; Arcia and Belli 2002. For more on the politics of education reform, see Kaufman and Nelson 2005; Grindle 2004; Navarro 2005; Corrales 1999.

In addition, countries should regularly participate in at least one global test of student achievement. Global achievement tests, such as PISA, TIMSS and PIRLS, provide an important benchmark for assessing progress—demonstrating how national schools stack up with other (competitor) countries. Countries that do poorly in these assessments can use the results to mobilize national support for needed changes. They constitute an important tool for quality control. In a global economy, however, countries are better served by participating in tests that are truly world-wide rather than in those that only include Latin American countries.

Although some officials caution that testing (and particularly global testing) is too expensive for developing countries, such arguments have little empirical base. Most estimates put testing costs at well under one percent of the annual cost of educating a student (Wolff, 2007 (forthcoming)). At those levels and given their potential for promoting quality, achievement tests appear to be remarkably cost-effective. Moreover, the payoff in terms of GDP growth to improvements in learning may be high. Hanushek suggests that “If this moderately strong improvement [.5 standard deviation] in student skills could be obtained during a 20-year reform period, a country could expect to pay for all of its educational expenditures by 2040 with the growth dividend” (Hanushek, 2005).

### **Make schools accountable—to parents, employers, and citizens**

Countries should establish mechanism of accountability that link schools to parents, employers and the broader community. The objective should be an effective, transparent system with clear standards, able providers, reasonable funding, measures of progress, rewards for success and sanctions for failure.

Accountability—setting goals and holding students, parents, teachers, principals, and ministries responsible for results—is crucial to good education and absent from most education systems in Latin America. In the region’s public schools, goals are not clearly spelled out, and progress is seldom carefully measured. Teachers receive the same salary, along with iron-clad job security, regardless of their performance or their students’ success. Students, parents and employers, who constitute the clients of schools, have little information on how schools are doing and almost no mechanisms of influence.

To be sure, accountability is not a dichotomous variable. Many different forms are possible. But in all cases where accountability exists, the providers of education face strong incentives to meet standards and perform at the highest level. They are, by one means or another, held accountable by education stakeholders (Figure 22).

#### **Figure 22. Does Accountability Improve Test Scores?**

Although true accountability includes more than just testing, debate often centers on whether high-stakes tests and other incentives (consequences) help or hinder student learning. Opponents argue that focusing on incentives detracts from using tests as an improvement tool and has unintended negative consequences (teaching to the test, disproportionate “punishment” of schools with poor and minority students, higher retention and dropout rates). Proponents argue that tests and other incentives increase schools’ focus on learning and help ensure that all children who need help get it. Who’s right? Probably both.

School systems in the United States have been implementing diverse accountability systems since the late 1980s. Where state exit exams were introduced, several studies found increases in dropout rates and retention, especially among low-achieving and minority students. But Texas saw retention rates level off and graduation rates begin to climb a few years after implementing its exit test. Researchers are unsure whether this is because the tests were “easy,” because students are showing sufficient increase in performance, because of Texas’s simultaneous large increases in spending, or some other factor.



A 2002 study based on national test scores in the United States found that states with stronger accountability systems\* saw larger gains in math scores of both lower and higher scoring students, regardless of race or ethnicity. These gains were stronger in middle schools than in primary schools. They remained after adjusting results for possible biases in who took the test (whether special education and students with limited English proficiency were included) and for context factors (proportion of minority students, population, and per pupil revenues) that influence which states adopt strong accountability and might also cause learning to increase regardless of accountability measures.

The longer term effects of accountability on learning are less clear, and more study is needed. However, the increased focus on learning and data-driven decision-making arising from accountability debates is a step in the right direction.

*\*The strength of an accountability system was ranked on a scale of 0–5 based on the degree of external pressure on schools to improve student achievement. States ranked as 0 have no statewide tests or standards; while states receiving a 5 test students at the primary and middle grades, strongly sanction and reward schools based on test scores, and require a high school exit exam for graduation.*

*Source: From PREAL 2005, based on information from Carnoy and Loeb, 2004.*

Making schools accountable is both a technical and political challenge. At least five basic elements need to be in place:

- Standards. Countries need to establish modern education standards in at least the most basic subjects, such as math and language, that clarify what students, teachers, and schools are expected to achieve. Standards must be stated in such a way as to be measurable.
- Information. Education systems need to provide reliable information on student achievement, school performance, and the steps being taken toward improvement. Achievement tests need to be designed so as to measure whether standards are being met.
- Consequences. Meeting, or failing to meet, education standards must have consequences. Teachers and schools that perform well should be rewarded. Those that consistently perform poorly should be sanctioned. Good education does not spring automatically from the good will of bureaucrats and teachers. It is also the result of tough and often unpopular institutional frameworks. Most of us need some combination of carrots and sticks to ensure that we serve the public good.
- Authority. All education actors—schools, local communities, and parents—should have some level of influence over education systems. Teachers should be able to decide on teaching strategies and materials. School directors need the power to allocate their budgets, to hire and fire teachers, and to reward good performers. Communities need some influence over school management and teacher selection. Parents should have at least some choice in determining where their children go to school. In most countries, most of these elements are missing.
- Capacity. Good education requires ability and resources. Teachers, principals, and schools need the funding, training, autonomy, and support necessary to meet the goals that have been established. Teachers need help in learning how to teach better. Schools need sufficient funding for infrastructure and materials. Public spending per student at primary and secondary levels is relatively low in Latin America, in part because governments have traditionally provided free university tuition for all. Redirecting part of that subsidy to public primary and secondary schools (which overwhelmingly serve the

poor) would be a good step in bolstering capacity, strengthening competitiveness and promoting equity.

By making learning the chief measure of success and making schools accountable to citizens, countries can take a major step forward in strengthening their competitiveness. Progress will nonetheless be slow. Improving education takes time, and depends on many factors working together. These two broad measures, however, constitute a powerful institutional dynamic that holds education actors responsible for their actions as public servants. Doing that well will help tip the balance in favor of producing consistently good education.

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<sup>1</sup> This chapter draws heavily from the Partnership for Educational Revitalization in the Americas, or PREAL's 2006 report, *Quantity without Quality: A Report Card on Education in Latin America* which is available on-line at [www.preal.org](http://www.preal.org). The authors would like to thank Kristin

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<sup>2</sup> Venezuela (which does not currently release figures) has had similarly high rates in the past.

<sup>3</sup> See Hanushek, 2005 for more on this topic.

<sup>4</sup> The results are even more striking when you consider Filmer, Hasan and Pritchett's (2006) assertion that in advanced economies workers with "average" skills are losing ground. Citing Murnane and Levy (1996) they argue that in the United States, for example, workers need at least a ninth grade ability in reading and math and be able work in groups, use computers, communicate effectively, and form and test hypothesis if they are to earn a wage sufficient to support a family. If the "average" student or worker in the OECD is falling behind, where does that leave Latin American students/future workers who are well below the OECD average?

<sup>5</sup> According to a recent UNESCO/IESALC study, Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Mexico, Nicaragua, Paraguay, and Uruguay have established national accreditation organizations over the last decade (Fernández Lamarra, 2006). Brazil has a long-standing program to accredit graduate programs as well (Holm-Nielsen, et. al., 2005).

<sup>6</sup> Most accreditation systems do not cover non-university tertiary education, especially distance and virtual programs (Fernández Lamarra, 2006).

<sup>7</sup> The ranking is based on a variety of factors including alumni and faculty receiving Nobel Prizes in physics, chemistry, medicine or economics (or Fields Medals in mathematics); number of highly cited researchers in life sciences, medicine, engineering, physical or social sciences; articles in major academic journals; and quality of education in relation to size. A similar ranking of the top 200 universities based primarily on peer review, produced in 2005 by The Times Higher Education Supplement in London ([www.thes.co.uk](http://www.thes.co.uk)), includes only two Latin American universities.

<sup>8</sup> According to Holm-Nielsen, et. al., 2005, "roughly 60 percent of teachers at public and 86 percent of teachers at private universities work part time, and many of them hold more than one job..." (p.48).

<sup>9</sup> Paradoxically, in the same study, Mexico and Uruguay seem to do relatively well in terms of the percentage of students who are confident with high-level tasks on computers (e.g. using of software to find and get rid of viruses, using a database to produce a list of addresses, using a spreadsheet to plot a graph, creating a power point presentation, or constructing a web-page), with rates near or above the OECD average and better than Korea for most indicators. Also note that while computer skills are important to competitiveness, it is less clear whether and how access to computers in schools affects the acquisition of those skills and learning more generally (OECD, 2005). Further study is needed to determine what technology programs will work best under what circumstances.

<sup>10</sup> The IDB study defines internationally competitive as students scoring at levels IV, V and VI on the PISA math test.

<sup>11</sup> However, Chile and Guatemala both appear to enroll higher quality applicants. In Chile, this is at least in part a response to higher salaries (Navarro, 2002).

<sup>12</sup> Until recently, several countries provided teacher training at the secondary school level.

<sup>13</sup> For more on specific country case studies, see Vegas, 2005.