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***ARE EDUCATIONAL REFORMS WORKING IN LATIN AMERICA?
A NEW LOOK AT UNDERSTANDING WHETHER EDUCATION
IS GETTING BETTER***

WORKING PAPER

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**Are Educational Reforms in Latin America Working? A
New Look at Understanding
Whether Education is Getting Better**

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DO EDUCATIONAL REFORMS IN LATIN AMERICA WORK? A NEW LOOK AT WHETHER EDUCATION IS GETTING BETTER

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In the 1980s and 1990s, as part of a global transformation, Latin American countries suffered economic crisis and then underwent economic transformation and political democratization. Educational systems also changed—in the larger economies, basic education (up to nine years of schooling) became largely universal. Secondary and tertiary education expanded rapidly. In the less developed Latin American countries, primary school enrollment expanded as well. A new emphasis on *quality* of education emerged, stimulating efforts to make schools and entire systems more accountable for student performance. Many countries also implemented alternative means of financing education. They decentralized control over finances away from central ministries to provinces, districts, and schools. Governments encouraged private education as a means to reducing public educational spending.

We can consider all these changes as educational reforms. Although many analysts focus on changes in the management (organization) of the system, on changes in technology (curriculum, for example), or on changes in financing, it is just as logical to consider expansion of enrollment (percentage of an age cohort attending a particular level of schooling) as a major "reform" of the educational system. Such expansions of enrollment usually have major implications for what occurs in schools, forcing the system to address changing needs as new kinds of clientele enter schools in large numbers.¹

With all the effort put into raising the quality of education during the 1980s and 1990s, it would seem that Latin American countries should have witnessed major improvements in overall student academic performance in primary and secondary schools. This has apparently not been the case—at least, there is no evidence that student achievement has improved. In countries that have been doing student assessments over time, such as Chile, during the period when tests were made comparable (1994-2000), results suggest minimal increases in average test scores (Bellei, 2001). This would not be much of an issue if student performance in Latin America were relatively high on a world standard, or in comparison with, for example, developing countries in Asia. But this is not the case either. Latin American countries whose students participated in the Third International Mathematics and Science Survey (TIMSS) performed far below European and Asian countries.

¹ For example, Carnoy and Loeb (2001) show that the most important explanation for whether a U.S. state has implemented "strong" accountability measures is the percentage of minority students in the state's schools. The need to implement accountability systems is therefore partly the result of expanded proportions of minority students in secondary education. Another example is Chile. As a result of its enormous expansion of secondary education since 1980, Chile was pushed to make important curricular reforms in secondary education in the 1990s.

Does this mean that the educational reforms have failed? Or rather, should reformers expand their measures of educational system performance to have a better conception of where the reforms are taking them? In this essay, I suggest a series of such measures that can be used to understand whether a country's educational changes are improving the outcomes for those in school. I make several key arguments:

- Many of the most important reforms concern *expanding* the educational system from, say, universal primary to universal secondary schooling. Some countries are doing much better in expanding more “successfully” than others. I will suggest several indicators that measure “success” in expanding systems.
- Even if average educational performance is not improving, the performance of some groups—namely disadvantaged students—may be improving. This is an important indicator, especially if they correspond to particular reforms that can be identified as responsible for the change.
- Most analysts agree that educational systems cannot make large improvements in *average* student performance without improved teaching. Improved teaching requires a combination of measures, including improving teacher attendance in school, recruiting better trained, more able individuals into the teaching occupation, distributing these more able individuals more equitably among schools, and creating a level of commitment among teachers to improving student performance. Based on current research, I will suggest a number of indicators that can measure how successful countries and regions are in accomplishing these goals.
- Certain other “supply side” indicators also connote probable eventual improvement in student performance in school. High among these is student attendance in school. Student attendance may be a function of parent participation in school and the perceived quality (by parents) of schooling, including teacher attendance and school organization (Marshall, 2001). I will discuss such indicators as possibly more relevant than student test scores, particularly in low-income populations.

There are a number of “popular” indicators that I will not discuss, mainly because I believe that their relevance to educational quality in the context of most Latin American countries is questionable. For example, there is considerable evidence now in the United States (based on the Tennessee class size experiment) that class size may have a significant effect on student achievement and, more important, on student attainment (Finn and Achilles, 1999). But in the Latin American context, class size is probably not a relevant indicator of quality. It is too entangled with peer effects resulting from widespread school choice in urban areas, teacher and student absenteeism in rural and urban areas, and pedagogical techniques that do not become more effective as the number of students in the class diminishes. Thus, smaller class sizes often result from a series of factors that make the schools that have these smaller class sizes less desirable places to learn. In rural areas, for example, small classes may be due to student absence due to

consistent teacher absence. In urban areas, where families can, to some degree, choose among public schools outside their neighborhoods, so at least partially sidestep residential segregation, “better” public schools (those with higher levels of student performance, representing higher value added or larger “peer group” effects²) and many private schools attract more students, filling classes to maximum capacity. Less well-regarded schools tend to have classes with fewer students because the schools operate at less than capacity. This is precisely what we would expect in a system governed by choice. If teaching were generally organized around individual attention and small group work in Latin America, fewer students in a class could mean higher value added in schools with smaller classes, hence an offset to higher performance in schools with already better students and greater “peer group” effects. However, most teachers in Latin America still teach using the “chalk and talk” method, or frontal teaching, in which a larger or smaller class size seems to have little effect on how much children learn.

Two other popular indicators of quality I will pay less attention to than do most analysts are repetition and drop out rates. The problem with both measures is that their relation to quality of education is conditioned by the conditions of entry at the next level of education. For example, in some poorer Latin American countries, repetition and drop out rates in the first years of primary school are much higher than in other countries. Does this mean that primary school quality is lower in those countries than in the richer countries, where both indicators are low? Almost certainly, the answer is yes. But let us assume that primary enrollment in the next ten years is universalized and secondary enrollment sharply expanded in, say, Honduras, and repetition and drop out rates in primary school fall substantially. Does that mean that the quality of Honduran primary education has risen? Perhaps it has. But, more likely, lower repetition and drop out reflect the changed *function* of primary education. Instead of acting in part as a sorting institution for access to relatively limited places in secondary schools, the expansion at that next level would allow many more entering first graders to continue into seventh grade. More rural primary school classrooms and perhaps even a number of rural secondary schools would have been built, creating places for more pupils in the higher grades of primary school and in basic secondary school. These places would need to be filled. Children would be passed into higher grades when in the past they would have been held back.

Similarly, in the more developed Latin American countries, the rapid expansion of secondary education almost automatically implies lower repetition and drop out rates in secondary schools. How access to university is determined also affects secondary drop out rates. For example, in Uruguay the drop out rates in the second cycle of secondary education (preparatoria) are higher than in neighboring Argentina and Chile (Carnoy, Cosse, Cox, and Martinez., 2001). Does this mean that the quality of Uruguayan secondary education is lower? Almost certainly it is as high or higher. Uruguayan preparatoria is a very traditional Latin American upper secondary school, organized to select students for university education. Students who graduate have automatic entrance to free public university, and this is limited to less than one-fourth of the age cohort. Unless the function of preparatoria changes in Uruguay, either because access becomes

² McEwan, 2001

limited to university education by other means, such as high fees (as in Chile), or less limited because of an expansion of public university places (as in Argentina), drop out rates will have to remain high, even if quality were to rise.

This is why repetition and drop out rates should be used very carefully as indicators of educational quality. They are much better measures of educational *access*., particularly for low income groups. Indirectly, they may serve as indicators of educational quality, or the success of an educational reform, because they tell us how many years children from lower income families are likely to stay in school. I will use them more as indicators of success in achieving educational equity.

This does not mean that we are precluded in all cases from using either or both these measures to indicate improved student performance. If, for example, poorly performing schools in Lima—schools marked by high repetition and drop outs—are provided some new methods and materials for teaching, or improve student attendance, and are thus able to reduce repetition and drop outs, this would suggest an improvement in quality and would constitute a successful reform. We can use repetition and drop out as indicators of quality in this case because these schools are situated in an overall system of education in which the average level of drop out and repetition is set by structural conditions, but particular schools' changes in repetition and drop out are a function of their educational practices. Thus, for educational reforms directed at certain sets of schools, reduction of repetition and drop out can be a good indicator of educational success.

Measuring the Success of Educational Expansion

Educational expansion has taken place in all Latin American countries over the past twenty years (Castro and Carnoy, 1998). More students attend primary school as a percentage of the age cohort than in 1980 and many more students attend secondary school and university. Part of this increase is due simply to economic growth in the region and resulting increases in educational spending. But an important part of the expansion took place in the 1980s despite economic crisis. We know that pressure for educational expansion may increase in economic crises because income forgone declines, often raising the private rate of return to taking more schooling. Although there are exceptions to the rule (for example, Costa Rica, where net enrollment in primary and secondary school declined from high initial levels in 1980-1990), many Latin American countries saw gross and net enrollment increases in primary and secondary schools in the 1980s. This expansion generally continued into the 1990s with economic recovery, this largely as a result of more funding available for expansion but also because countries have long been committed to a politics of educational expansion.

Should we consider a higher percentage of an age cohort *finishing* higher levels of schooling, as was the case in many Latin American countries in 1980-2000, a measure of educational reform success? I believe that we should, for several reasons.

Historically, almost all countries in the world have raised academic achievement in their populations by increasing the average numbers of years of schooling taken by successive generations of students. The OECD literacy survey, which included Chile, suggests how large the changes in achievement from generation to generation have been. There is no doubt, the OECD shows, that 25 year-olds in every country surveyed are more literate than their parents. This is largely true because they have higher levels of education, not because they have gone to “better” schools. Thus, incorporating an increasing proportion of an age cohort into ever-higher levels of education may be the most important thing that governments can do to increase student achievement. Reforms that accomplish that goal should be considered successful even if the average level of performance of students in, say, the eighth grade, does not increase at all over the next ten years. Put another way, assume that eighth graders in Colombia score somewhat higher than eighth graders in Chile on an international math test, but that average education (number of years of schooling in Chile among 15-24 year-olds is much higher than in Colombia. Which fact is more important in determining the potential productivity of the labor force or the level of other social indicators, or even of the quality of the educational system?

To achieve major increases in completion rates at a given level of schooling, governments usually redefine the nature of a given level of schooling. They do more than just build more buildings and supply more teachers, although that, too, is an important accomplishment. They necessarily need to *reform* their education systems to accommodate the notion that a much higher fraction of students will finish a particular level of schooling, whether this is primary schooling or university. These reforms should not be taken lightly. At the same time, their success can be measured by increases in the proportion of young people reaching higher levels of schooling.

Consider a low performer among Latin American countries, such as Honduras. In 1998, 31 percent of the Honduran population, 15-24 years old had 5 years of education or less (OREALC, *Regional Report*, Santiago, Chile, 2001, p. 91). Honduras is a poor country, but that explains only part of the problem. Honduran primary schools, particularly those in rural areas, are marked by severe teacher and student absenteeism and a shortage of classroom space to accommodate first and second grade pupils who might move into the third and fourth grades and onto sixth. This is partly due to low levels of resources, but not entirely. Many children begin school two years older than the normal starting age of seven, clearly a feature of family poverty. But primary teacher salaries are relatively good, so teacher absenteeism is more a result of mismanagement than low incentives. Repetition rates in the early grades are extreme, leading to high dropout rates. Improving primary completion rates would require construction of large numbers of classrooms in rural and some urban areas. It would also require building many more secondary schools, since most families consider that the main reason for completing primary school is to go on to secondary. Supplying teachers for new classrooms should be no problem, since teaching training schools in Honduras graduate 20 for every one that gets a job teaching (Carnoy and McEwan, 1997). But beyond school construction and supplying teachers, raising primary completion rates would require reforms that would reduce teacher absenteeism substantially, change teaching methods,

and supply materials to improve learning conditions in classrooms—in other words, reforms that would *reconstruct* Honduran primary education.

At the other end of the spectrum, consider Chile and Mexico's expansion of higher secondary education compared with Uruguay's much slower progress at the preparatoria level. Was this just a product of differential economic growth? The evidence suggests an alternative explanation. Much of the very rapid growth of upper secondary education in Mexico was produced by creating new forms of technical and bachillerato schools, outside of the elite preparatorias associated with the National University or the Politecnico Nacional. One of the fastest growing, for example, was Conalep, an autonomous system of more than 250 technical schools originally intended to provide technical training for low-income youth who would end up as skilled workers, mainly in Mexican manufacturing industry. Despite dropout rates of 50 percent (about the same as the rest of the upper secondary level), Conalep was able to combine basic math and language education with technical training and internships in industry to produce large numbers of graduates in the past 15 years. Other new institutions, based on various models of upper secondary education, have also incorporated a relatively high percentage of low-income youth into the upper secondary system. As the level expanded, all these institutions changed their "charters" so that graduates could use their degrees to enter the post-secondary system. And even the post-secondary system began to change to accommodate a new "range" of graduates. For example, state and federal governments have created a set of new, well-funded two-year technical schools—the Universidades Tecnicas—designed to produce highly skilled technicians for manufacturing and services. Now, the charter of these institutions has also changed to allow graduates to continue on to full universities.³

Chile also achieved a major expansion of secondary education between 1980 and 2000. The Chilean expansion, like Mexico's, came mainly through the expansion of technical education, some of it associated with industrial partnerships. Chile's expansion also occurred initially in the context of a radical decentralization and privatization reform under the military government (1981). A significant fraction of Chile's public secondary school students shifted to private education under a per student subsidization, or voucher plan, that gave private schools approximately the same funding per student as public schools (see Cox, 1997). In the 1990s, however, expansion was effected mainly through increased funding for technical and non-technical secondary education, an attempt to improve secondary education through a concerted program of new materials, teacher training, improved curriculum, and a major investment in computers and Internet (ENLACES). As a result, Chile's completion rate in secondary education is one of the highest in the region. A higher percentage of Chilean young people have 10 years of schooling or more than in any Latin American country but Cuba. Although the increased funding per student is a product of sustained economic growth, it also results from a high degree of commitment to education by a series of Chilean democratically elected governments. The focus on making secondary education universal for Chilean youth and supporting that effort with new materials, new technology (including new curriculum) and more training was key to achieving high rates of completion. Although enrollment in

³ For a review of the Mexican preparatoria level, see xxxx et. al, and Bernardo Naranjo,

universities was expanding rapidly in the period 1990-2000, the highly privatized nature of the Chilean higher education system, especially universities, allowed Chile to expand secondary school completion without placing a high public finance burden on the government from massive growth of the university system. But it has also placed barriers to entry for many capable secondary school graduates who could successfully complete higher education were more public funds available. Nevertheless, it is apparent that Chile, like Mexico, has increased the average education of massive numbers of low-income youth, mainly by *reforming* secondary education, and hence has raised average achievement levels.

In contrast, Uruguay did not change the nature of its preparatoria education. Uruguay does have a fraction of its higher secondary students in technical education, but this too has remained traditional. Preparatory school in Uruguay has the task of preparing students for university. Successful completion of higher secondary education means automatic entrance to a free public university. Since the university has expanded enrollment slowly, preparatory schools remain institutions that must decide who is “fit” to continue on to higher education at public expense. Drop out rates in Uruguay’s preparatorias, at about 37 percent, are much higher than drop outs from secondary schools in Argentina and Chile. Although there is reason to believe that Uruguayan secondary school students achieve as highly as students in Chile or Argentina, the fact that they are less likely to complete secondary school means that their ultimate achievement levels are probably lower. The difference can be attributed directly to the lack of secondary education reform in Uruguay—as presently constructed, preparatoria education is not organized for mass producing secondary school graduates; it retains its traditional charter of selecting students for universities. This suggests that reform is a necessary part of any educational expansion and that the success of reforms can be measured by their ability to increase enrollment and completion rates in a particular level of education. The Uruguayan government has recognized this axiom is moving toward preparatoria reform.

Another type of contrast is the experience of Costa Rica in the 1980s. Because of the economic crisis and the requirements of World Bank structural adjustment loans (SALs), Costa Rica lowered the public expenditure per pupil in secondary schools, began charging fees to students to cover costs of pedagogical materials, and began replacing experienced, higher-paid teachers with younger, uncertified teachers (Carnoy and Torres, 1994). Repetition and drop out rates increased and success rates on the secondary school final examinations declined, all an indication that the quality of secondary education went down in the 1980s.

One of the most common critiques of enrollment and completion rates as a measure of educational improvement is the claim that quality of education in, say, secondary school automatically declines as these rates increase. Yet, there is considerable evidence that this is not the case. For example, in the United States, the massification of high school completion and an enormous increase in the proportion of high school seniors who take the Scholastic Aptitude Test (SAT) has not led to a significant decline in the average scores on this test (Rothstein, 1998). Similarly, in Chile, average scores on

the high school version of the SIMCE test have not declined in the 1990s despite increases in the proportion of the age cohort taking the test (Bellei, 2001). The same seems to be true for Argentina's testing results at the secondary level (Cosse, 2001).

One reason that achievement scores may not decline significantly even as a higher fraction of the age cohort enters and completes a given level of schooling is that the educational system is probably organized to reach particular goals (standards or quotas) rather than to increase productivity spontaneously. In that sense of being quota driven, schools are not "entrepreneurial" organizations. This is frustrating to many reformers, but if understood, the goal (standard) orientation of the system can be effective in producing a similar quality of output even as the quality of inputs changes. The system may have to be forced to do this by reforming it (compare Chile with Uruguay), but once given its new marching orders, it is likely to maintain average academic achievement even as the average socio-economic background of the students declines.

A major problem with most educational systems is that educators prefer to track students into different levels so that educational goals can be adjusted to the human capital the student brings to the school. It seems to make sense that some young people are not that interested or good at academic work so should be shunted into less demanding and more "practical" courses of study. Yet, recent experience in the United States has shown that it is possible to teach algebra to lower socio-economic background students if teachers are determined to do so. Eighth grade math results for Hispanic students in Texas, where academic standards have been raised for lower income students, are a reflection of this possibility (Carnoy, Loeb, and Smith, 2001). Analysis of the TIMSS results across countries also suggests that tracking probably reduces average test scores because so many students (those in lower tracks) are not exposed to math and science concepts important to developing proficiency in these two subjects. Lower standards allows teachers to avoid teaching these concepts to students from lower socio-economic backgrounds.

Educational Reform as Improving Equity

I have just made a strong argument that the most successful educational reforms in terms of increasing the average level of achievement in the populations are those that increase educational *attainment*. Increasing educational attainment can also be the most important way that nations and regions improve educational equity. The way that education is expanded has an important influence on this equity effect. For example, Colombia and Bolivia have relatively high percentages of 15-24 year-olds with ten or more years of schooling, but also relatively high percentages of the same age group with less than 5 years of schooling. Mexico has a lower percentage with ten or more years, but a very low percentage with less than five years of schooling. It appears that Mexico may have achieved greater equity by essentially universalizing primary education, even in rural areas (OREALC, 2001, p.90).

Since many countries of Latin America are at the stage of trying to universalize secondary education, the expansion of this level necessarily is accomplished by

incorporating students whose parents have much lower levels of education. It is evident in Argentina, Chile, and Uruguay that the “new” enrollment in secondary education over the past twenty years is urban working class and rural, and that the main challenge of educational reform is to bring these lower socioeconomic class students to successful completion of secondary schooling. Besides raising the average level of educational achievement in the society, as I have argued above, reforms that significantly increase average levels of educational attainment generally have to increase educational equity because they incorporate an increasing fraction of lower socioeconomic class youth first into primary schooling, then secondary, and eventually university.

Nevertheless, greater educational equity does not mean economic equity. Chile’s educational system can be regarded as highly equitable compared to Brazil’s, for example, but the income distributions in the two countries are similarly unequal. Uruguay’s educational system is probably less equitable than Chile’s, but its income distribution is far more equal. One “reason” (not causal, just explanatory) for Chile’s greater income inequality than Uruguay’s even with greater educational equity in Chile, is that the payoff to completing university is much higher in Chile than in Uruguay (Carnoy et. al., 2001). Access to university in Chile is lower than it might be because of high tuition charges. But access to university is also restricted in Uruguay by an upper secondary system that induces students to drop out before completing. In both countries, less than 25 percent of the age cohort is enrolled in university. The much higher payoff in Chile, however, means that those that do complete university are distant, income-wise, from the mass of students who complete secondary education but do not continue. In Uruguay, the incomes of those who complete university are not much higher than the incomes of secondary school graduates. The difference may be due to higher growth rates in Chile and a more “dynamic” economy, but it may also be due to past policies that allowed those with higher incomes to gain ground on the poor and middle class. In any case, even as secondary school education incorporated the working class in Chile, income distribution became more unequal.

Besides the effect of educational reforms on educational expansion and hence on educational equity, it is possible that some education policies have significant impact on the academic performance of lower income students *within a given level of schooling* even if larger, structural reforms have little effect on the average productivity of education. We have collected a considerable amount of information on the relative impact of structural reforms such as decentralization and privatization on overall student performance in countries such as Chile, Mexico, and Argentina. A number of studies that assess the impact of policies targeted at low-income students are also available.

The evidence suggests that structural reforms have had relatively little impact on overall educational "effort" in terms of investment in education or on student performance. Argentina transferred control of primary schools entirely to provincial governments in the late 1970s and of secondary schools in 1993. Increased control of educational resources in the Argentine provinces put educational decision making into the individual political contexts of each province, with very varied results. If we rank provinces by educational "necessity," as defined by their retention, drop out, educational

attainment, and gross product per capita, we find that more educationally wanting provinces increased spending per student about the same percentage as more advantaged provinces after the 1993 transfer. Neither did more educationally wanting provinces increase secondary enrollment significantly more or less than the better off provinces (Cosse, 2001). Secondary enrollment gains in the 1980s, before the 1993 transfer, were about the same as in the 1990s (Carnoy, Cosse, Cox, and Martinez, 2001). So educational effort, enrollment growth, and enrollment growth equity among provinces in Argentina did not seem to be affected by decentralization. Average student performance in secondary education between 1993 and 1999 is more difficult to assess because the tests are not comparable, but there is no sense in Argentina that student performance is rising (Carnoy, Carnoy, Cosse, Cox, and Martinez, 2001). Much the same can be said about educational effort and enrollment growth in Mexico after the decentralization of the early 1990s. The states are not increasing their educational investment as a result of gaining control of their schools (Paulin, 2001).

In Chile, available evidence suggests that the hoped for increases in efficiency from increased competition among schools and from an increased role for privately managed schools did not make schooling more effective than before the voucher reform (McEwan and Carnoy, 2000; Hsieh and Urquiola, 2001; Bellei, 2001). The one major effect that the reform may have had is to bring more private resources into education, but that came mainly from making families pay a high fraction (70 percent) of the costs of sending their children to university (Gonzalez, 2001). With new legislation in 1993, it became legal for subsidized private schools to charge tuition. Private contributions for primary and secondary schooling increased over the next eight years, but that contribution is small compared to family investments in higher education. We should remember that even before the 1981 reform, 20 percent of students attended private primary schools, and 6 percent of those were in private paid schools that received no government subsidies.

Privatization in the 1980s may not have lowered or raised overall student performance, but evidence suggests that it may have had a negative effect on low-income students. Indeed, research shows that low-income student performance in non-religious subsidized private schools in Chile, which enroll 21 percent of all basic education students in the country, is significantly lower than in public municipal schools (McEwan and Carnoy, 2000). So structural reforms seem to have made little overall improvement in student performance, and probably had relatively little impact on enrollment expansion in primary and secondary education, even though privatization may have made it possible to expand university at lower public expense.

In contrast to structural reforms, targeted reforms--specific programs aimed at disadvantaged groups--appear to have been much likely to succeed in improving academic performance for the targeted groups. A famous example in Latin America is the Escuela Nueva, in Colombia, now found in other countries under other names. The Escuela Nueva targets low-income rural students and seems to have had a positive impact on student performance, largely through providing a support network for rural teachers and increasing their commitment to teaching in isolated rural schools (McEwan, 2000).

Direct financial interventions by central ministries into improving outcomes for low income students were also effective in both Argentina and Chile. The P-900 program, begun in 1990 in Chile and extended to almost 2,500 schools by the end of the decade raised test scores of pupils significantly in low-scoring schools (Cox, 2001; McEwan and Carnoy, 1999). Elements of the Plan Social in Argentina, directed at rural schools and low-income students attending secondary schools, also seemed to have positive effects on student outcomes. Uruguay's direct financial assistance to low-scoring schools (based on the 1996 6th grade evaluation) probably contributed to a significant increase in test scores among the countries lowest-income students (Filgueira and Martinez, 2001). A targeted voucher plan in Colombia in the 1990s seemed to have a positive effect on low-income student attainment--students who received vouchers and used them to attend private (religious) secondary schools stayed in school into the higher grades and were less likely to drop out (Angrist et.al., 2000).⁴

Such equity-driven reforms seem to have been more successful in raising student performance than system-wide reforms, primarily because targeted reforms are usually aimed at groups that receive fewer or lower quality educational resources until they receive special attention. That special attention seems to pay off. It would also seem easier to raise school productivity by bringing existing technology and resources already used for higher income students into a low-income situation than developing new methods to raise productivity throughout the educational system. Similarly, bringing a relatively few low-income students into each of many already existing private schools through a limited targeted voucher program as in Colombia is much more likely to benefit low-income students through "peer effect" than a Chilean-type plan that creates many new for-profit private schools of questionable quality.

Improved Teaching and Improvement in Student Performance

Educational analysts have long stressed that improved teaching can have an important impact on student performance. Can we identify indicators of improved teaching that should lead to eventual student academic achievement gains? Can we identify reforms that seem to lead to improved teaching? That may have negative effects on improving teaching?

Rather than focus on the pedagogical literature, I will discuss issues of incentives and counter incentives that may affect the level of teacher productivity in Latin America's schools. We know it is possible to achieve high levels of learning in Latin America, because one country in the region, Cuba, appears to be reaching international levels of achievement in mathematics. Even if the test scores in the 1999 OREALC thirteen country survey of Latin American third and fourth graders exaggerate the level of Cuban achievement, there is little doubt that Cuban children are scoring much higher than children in other countries (LLECE, 1999; Carnoy and Marshall, 2001). One of the elements in Cuba's success is the higher average education of parents in Cuba, and the

⁴ Angrist, Joshua D., Eric Bettinger, Erik Bloom, Elizabeth King, and Michael Kremer. (2000). "Vouchers for Private Schooling in Colombia: Evidence from a Randomized Natural Experiment." Washington, D.C.: World Bank (mimeo).

lower level of abject poverty, as reflected in the low proportion of children who work outside the home. But school factors also play a role. For one, educational expectations are high in Cuba, as reflected in the curriculum and textbooks used in mathematics. Secondly, and this is what I want to focus on here, Cuban teachers with university level education are paid the same (low) salaries that other professionals are paid, so entering teaching as a profession requires little financial sacrifice. Teachers also have the same social status as most other university graduates. Thus, it appears that Cuban schools can implement more demanding curricula in part because even primary teachers have the capacity to teach those curricula.

There are other key factors that distinguish Cuba's schools from schools in other Latin American countries. Teachers in Cuba are unlikely to take frequent absences, excused or unexcused. Cuban primary schools offer more hours of school and even more hours of math per week than schools in most Latin American countries, although this varies among countries (OREALC, 2001, p. 45). And the distribution of "good" teachers in Cuba among rural and urban schools and among schools serving more disadvantaged and more advantaged populations is likely to be more equal than in other Latin American countries. Although we have no hard data on absences or teacher distribution in Cuba, anecdotal evidence suggests that such assertions are correct (Carnoy, 1989).

These differences point to a number of indicators that could serve as measures of improvement in the educational system--improvement that should eventually yield higher teacher productivity and higher student performance.

- The time per day and per year that teachers actually teach in a classroom is obviously a crucial variable when the total number of hours per year is low. In Argentina, a highly developed country in many respects, primary school students attend school an average of four hours per day, or less than 750 hours per year. However, teacher absences are relatively frequent in many provinces, and many days per year are lost in teacher strikes. At the other end of the economic spectrum, Honduras loses approximately half its already low number of "official" hours of primary schooling per year through teacher absences, mainly but not only in rural areas (Carnoy and McEwan, 1997). Teacher absence is a pervasive problem throughout Latin America, yet is rarely discussed or used as an indicator of educational quality. Reforms to improve teacher attendance are politically difficult since they confront either corrupt teacher employment policies (for Mexico, see Bayardo, 1992) or the opposition of the teachers' unions or both. Teacher strikes, which also account for many lost days in some countries, might be reduced by better coordination of reforms and educational policies with teacher organizations, but often reflect wider conflictual politics in the country concerned. Chile has had the luxury of very few lost days from teacher strikes over the past ten years, but this has been mainly the result of a consensual period in Chilean politics, following on the heels of 17 years of military rule (Cox, 2001, Nunez, 2001).
- The distribution of teacher "quality" (as measured by education, experience, and test score on evaluations of teacher knowledge in subject areas) among schools serving

lower and higher-income students appears to be highly unequal even in developed states of developed countries, such as New York state in the United States (Langford, Loeb and Wykoff , 2001). Recent findings for Mexico suggest that there is even greater polarization of teacher quality among schools in developing countries (Lastra, 2001; Santibanez, 2001). This makes logical sense for two reasons: more educated and higher social class teachers are likely to reside in higher income neighborhoods and regions so are more likely to teach in a school with higher income students; and more able teachers are in greater demand, so may have greater choices in where they work, hence, everything else equal, will tend to shift to schools with better conditions and “easier” students. Since salaries are generally set by salary schedules negotiated at the national or regional level, teachers get paid essentially the same salary no matter where they work. Rural teachers or those working in “hardship” areas (Tierra del Fuego, for example), get higher salaries, but these usually are not high enough to compensate individuals who have normal lifestyle preferences. It has been politically difficult almost everywhere in the world to pay teachers systematically and significantly more to teach in low-income schools, since this represents a transparent shift of public resources to the poor, a move greatly resisted by middle classes everywhere. For example, Chile voucher plan was designed to pay the same amount per child regardless of social class.⁵ The effect of these equal payment regimens is that higher-income children not only benefit from their own higher cultural capital, but from a substantial peer effect of attending schools where the other students are also from higher income families, and from being taught by more capable, more experienced teachers.

If we believe that this distribution of resources is efficient, then a more unequal distribution of peer and school resources should produce better average results than a more equal distribution. The Chilean experience suggests that greater inequality in the distribution of students does not produce higher average student performance (Carnoy, 1998). Would equalizing teacher resources among schools with lower and higher-income students increase or decrease average outcomes. This is a difficult question to answer. Low-income students would probably do significantly better, but would higher-income students do significantly worse? One argument is that higher-income parents can offset most of the bad effects of a poor teacher, but lower-income parents cannot. But we have no evidence to support this notion. Another argument is that it takes only small increments of high quality resources to produce positive effects at the low student performance end of the spectrum, but much greater increases in resources to produce increases in student performance among already high-performing students. Chilean estimates of cost-effectiveness comparing public schools, subsidized private schools, and paid (high tuition) private schools suggest that students in paid private schools achieve the highest test scores, but that the schools are by far less cost-effective than schools serving much lower-income, lower achieving children (McEwan and Carnoy, 2000). From an efficiency standpoint, some case can therefore be made for resource shifts, but the case is not strong.

⁵ Holland is an exception to this rule. The Dutch voucher plan subsidizes low-income children with a voucher 25 percent larger than the normal voucher amount.

But from an equity standpoint, it is more likely that shifting better teachers to lower-income schools should work to equalize outcomes. The question is: how to accomplish such a shift. Incentive pay schemes, such as the SNED in Chile, that reward teachers in schools that beat average test score gains in similar social class schools, have not been evaluated for their effectiveness in systematically improving teaching or shifting good teachers to lower-performing schools. There are advantages and problems with incentive schemes based on increasing value added in the school based on student test scores. The main advantage is that the goal is clear and the school can organize around that goal. This can create a positive organizational effect of “aligning” the school around academic achievement (Rothstein, Carnoy, and Benveniste, 1999). The downside is that such incentives can push schools and teachers to spend a disproportionate amount of time teaching the test. It is also likely that small schools will have a greater variance in performance from year to year because of the greater statistical variability of their student body, hence will have a greater likelihood of being rewarded at least once in a while (Kane, 2000).

- A more profound problem for most Latin American is the average *level* of capacity in their teaching force. This is not just the result of the quality of teacher pre-service education, which is notably poor (Lockheed and Verspoor, 1988). Nor is it necessarily an issue of the current level of teacher salaries, which are low relative to the pay in other professions in some countries, but relatively high for women teachers in many countries compared to women workers with similar levels of education (Vega, Experton, and Pritchard, 1999; Carnoy and McEwan, 1997; Santibanez, 2001). However, as a recent study has shown, the higher relative salaries paid to teachers may be misleading. If teachers are divided by levels of education, the higher relative salaries may obtain mainly for those with secondary education, who either teach at the primary level or entered the labor market in the past when lower levels of education were acceptable (Razquin, 2001). Women teachers with post-secondary education are more likely to earn relatively less than women earn with post-secondary education working in other professions. This is even more often the case for men, whose opportunities outside teaching are much greater.

The lower comparative salaries for post-secondary educated teachers may create a dilemma for educational reform strategies. Almost all Latin American countries have gradually raised the educational requirements for teachers over the past twenty years. In periods of recession, such as the 1980s, teacher salaries generally fall in real terms. Yet, the relative salaries of teachers compared to workers with similar levels of education probably rise (because public sector salaries are sticky downward compared to private sector salaries). In periods of economic crisis, it is easier to attract individuals into teaching, even individuals with more education than required. This happened in Mexico in the 1980s, when many university graduates trained for other professions chose to go into teaching because of the crisis in the private sector. But in periods of economic growth and rapid expansion of secondary education--characteristic of the 1990s throughout Latin America, recruiting teachers with post-secondary degrees is more difficult, and might mean a decline in the quality of individuals being drawn into teaching. This could be mitigated by an increased supply

of higher educated women entering the labor market because of changes in values concerning women's work, for example. It also could be mitigated by the much lower cost of obtaining a teaching degree compared to other university degrees. But unless teachers' work is highly regarded on other grounds, countries in which the salaries of teachers with post-secondary education are relatively low compared to those with higher education degrees in other professions, could face a shortage of well-qualified teachers, particularly in secondary education. Many of the most important educational reforms in Latin America in the past ten years and in the next decade concern secondary education. Thus, the relative salaries of post-secondary trained teachers (and the supply of newly certified secondary school teachers) are important indicators of the potential success of other reforms to raise student achievement and attainment.

To summarize, key indicators concerning teaching that are important for measuring the success, or potential success, of educational reform are as follows:

- The number of classroom hours per day and year encountered by an average student. This has to be estimated using required hours adjusted for three factors--teacher absenteeism, student absenteeism, and loss of days to teacher strikes. The first two are difficult to measure, but are (or should be) important objectives of educational reform. So should the reduction of strike days. If real hours in the classroom are increasing, it is likely that student performance will improve. In some countries or regions where absenteeism or low numbers of required hours is an important issue, increasing contact hours may be the *most* important objective of educational reform. As a primary school teacher in a low-income school once asked me, "How can we be expected to increase these students' achievement levels when we only have them in class for three and one-half hours per day?"
- The distribution of teachers by education and experience across schools by the socioeconomic background of the students in the school. The more polarized this variable, the more unequal school capacity and the less likely that government programs can raise low-income students' achievement.
- The salaries of teachers by level of education compared to non-teachers with the same education. Comparisons should be made within gender group, men and women separately. The higher the relative salaries of teachers with a given level of education, the more likely reforms aimed at the level of education where those teachers are teaching will succeed.

Student Attendance in School

I want to put special emphasis on student attendance in school as a key indicator of whether countries or regions are improving educational systems. Almost all Latin American countries are past the stage in which simply increasing the percentage of children enrolled in primary school is a major objective of educational reform. Having passed this stage, however, does not eliminate the problem of how often students actually come to school. Recent research suggests that parents are more likely to send their

children to school and adolescents more likely to attend school when schooling is higher quality (Hanushek and Lavy, 1994; Bedi and Marshall, 1999; Marshall and White, 2001). This higher quality could represent high teacher attendance, good teaching, and more interesting, challenging curriculum.

Student attendance rates may be a good proxy measure for school quality, and the interaction of higher attendance rates and higher school quality, a good predictor of higher student achievement. One of the interesting side effects of this interaction is that "better" schools in Latin American cities tend to have more students in classes than do "worse" schools. Motivated parents try to send their children to these better schools even if they do not live in the school's immediate neighborhood. One reason that cross-section studies measuring the effect of class size on student achievement show no significant impact is probably due to the greater demand for places in schools that are known to be good. A school's reputation may be the result mainly of peer effect, but as I have argued, such schools also tend to attract better teachers. This "clustering" effect of good teachers and good students fills classrooms. Less attractive schools will have smaller positive or even negative peer effect, less effective teachers, fewer students in their classes, poorer attendance rates, and lower average performance.

Another reason for using student attendance as a measure of school quality is that it is relatively easy to measure and represents a concrete objective that reforms can attempt to improve. For example, Bolsa Escola, the Brazilian direct payment scheme for very low-income parents is specifically designed to subsidize families to keep children attending school. Chile's teacher pay incentive system (SNED) also includes attendance as one of its objectives.

Conclusions

Based on what we know about how educational systems increase a society's knowledge, I have recommended a number of ways that Latin American countries can tell whether they are increasing how much children learn and whether educational reforms work to make schools more effective and equitable.

- Expanding access to more years of education is still the most common way that societies increase young people's math and language skills. Countries in Latin America with higher average schooling are better at complex production and have children who are easier to teach even higher levels of academic skills in the next generation. Increasing the number of years of education taken by students does not have to wait until achievement rises in lower grades, and historically, it has not. So a rising average level of schooling is an objective in and of itself and a measure of the success of education reforms.
- If the average number of years of schooling attended increases and average test scores do not decline in a level of schooling that is raising its enrollment and completion rates rapidly, policy makers can assume that schools are *increasing* their

effectiveness. That level has, in effect, absorbed students with less cultural capital and has brought the new student body to similar levels of achievement as past groups.

- Rapid growth of enrollment and completion of lower levels of schooling--first primary, then secondary, provides benefits for lower socioeconomic class children, since these are the groups that are absorbed into these levels of schooling when they are universalized. Furthermore, educational improvement programs that target these groups generally seem to work. Thus, indicators showing improved attainment and achievement for lower-income students represent valid evidence that educational reforms aimed at these students work.
- Indicators showing more contact time for students with teachers are good proxies for improved educational quality.
- Increased student attendance in school is also an indicator of improved educational quality. Policy makers can use increased student attendance as an objective for schools to improve student performance.

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