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of Primary Education
in Latin America and
the Caribbean

Toward the 21st Century

Laurence Wolff
Ernesto Schiefelbein
Jorge Valenzuela

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FOREWORD

Primary education has been shown to be fundamental for longer term economic and social development. While many countries in Latin America and the Caribbean are now fully aware of the importance of improving the quality of education, much needs to be done. This study reviews progress and issues to date and makes recommendations for a renewed effort, with an emphasis on pre-schooling targeted to at-risk children, on providing textbooks and teaching materials, and on changing teacher behavior.

The study provides a wealth of comparative information on progress in Latin America and the Caribbean. It is directed at the informed general public as well as at government officials, teachers, school administrators, and students. It is part of continuing series of reports prepared by the Technical Department of the Latin America and the Caribbean Regional Office.

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ABSTRACT

This report reviews selected issues and progress to date in Latin America and the Caribbean (LAC) in improving primary education quality and provides suggestions and recommendations for the future. The report notes that 29% of all children in LAC primary schools are repeating their grade each year; and LAC spends US\$2.5 million each year to teach some 20 million repeaters. Based on international studies of achievement, LAC countries do significantly worse than the developed world, and worse than many developing countries in Asia.

The report emphasizes the importance of focussing on three key investments with potentially the most cost effective results in terms of increased learning and retention in school. The first is the provision of programs of early childhood development to the poorest and most vulnerable elements of society. The second is that changing teachers' classroom behavior, through encouraging audience and context specific instruction, multi-grade teaching, new strategies for teaching reading, bilingual education, and flexible promotion policies. The third key action is the provision of adequate quantity and quality of textbooks and educational materials to children. To better measure progress LAC countries also need to devise a better system of monitoring key quality indicators, define and monitor minimum packages of educational inputs, through developing educational assessment systems, and through supporting relevant educational research. On average LAC countries ought to increase their spending on primary education by at least 15%, especially to provide adequate textbooks and targeted pre-schooling programs.

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Executive Summary

The objective of this report is to review selected issues and progress to date in Latin America and the Caribbean (LAC) in improving primary education quality and to provide suggestions and recommendations for the future. The report recommends strategies for managing three elements which are identified as fundamental for improving primary education quality--the increased provision of pre-schooling, making available adequate and appropriate textbooks and teaching materials, and changing the classroom behavior of teachers. It also reviews issues related to financing primary education and monitoring the primary education system. The report is neither an exhaustive nor definitive review of this very complex subject. For example, it covers management issues only partially. Much of the data analyzed is incomplete and not all of the relevant experiences of LAC countries in improving primary education quality have been identified.

At the outset, the reasons for investing in primary education should be repeated. There is now much literature which documents the importance of primary education in economic development. There is a high correlation between national investment in education and economic growth. Virtually all of the newly industrialized economies of the past twenty five years, such as Hong Kong, Israel, Japan, and the Republic of Korea, achieved universal or almost universal primary enrollment by 1965 and since then significantly increased their populations' average years of schooling. There are high social returns to primary education throughout the world. A recent update of economic returns of education by education level in fourteen LAC countries showed that the social rate of return of primary education averaged over 17%.

Over the past ten years Latin American countries have recognized the importance of investing in primary education. One measure of such interest is the growth of international lending for primary education improvement. *World Bank lending in LAC for primary education has increased from an average of US\$20 million per year in 1985-90 to an expected US\$500 million per year in 1991-95.* Another measure of regional interest is the extent to which Ministers of Education, in conjunction with UNESCO/OREALC, have committed themselves to primary education quality improvement efforts. However, in spite of the announced priorities as well as the increase in international lending, LAC may well be making an inadequate financial, human resources and policy effort. *Public expenditures on primary education per student in LAC decreased significantly between 1980 and 1989, in part a result of the economic downturn affecting the entire region.* Except for a few countries, LAC countries appear to be neglecting the provision of textbooks, which is a fundamental element of primary education. A renewed effort is of particular importance since many countries are now resuming economic growth, and many have additional financial resources to invest in the social sectors.

Learning Achievement, School Repetition, and School Completion in LAC

While most countries in the region have achieved the quantitative goal of having enough physical places in primary education to serve the school age population, primary education in LAC continues to be beset by inadequate achievement. *LAC countries do significantly worse in terms of achievement than the developed world, and also do worse than many developing countries in Asia.* There is some evidence that the English speaking Caribbean does better than other countries in the region, although they are still significantly behind the developed world and the Asian countries. The most recent study of five countries in LAC confirms that the best private schools in LAC score significantly higher than public schools in internationally comparable tests of achievement. However, all private schools account for no more than 13% of enrollment; and there is evidence that many of these private schools score only slightly better or no better than the public schools on achievement tests.

The primary schools have an obligation to educate the children they receive to become literate, numerate, confident, and problem solving primary school graduates. A review of eighteen research reports, which specifically measured the relationship between education inputs and outputs for LAC, confirms world-wide findings. The availability of textbooks and the provision of pre-schooling are correlated with achievement. Other factors having positive relationships include: more personalized and flexible teaching methods; some pre-service training; teacher experience; schooling; and subject matter knowledge; teacher proximity and attendance in school; time on task; homework parental involvement; and curriculum coverage. Factors unrelated to learning include marginal changes in class size and individual teacher salary levels. The available studies do not examine processes such as leadership, attitudes, and content of training programs.

Of the nine million six or seven year-olds entering first grade in Latin America, some four million fail the first time around. Overall, 29% of all primary students are repeating their grade each year; in first grade, 42% are repeating. *Latin America spends US\$ 2.5 billion each year to teach some 20 million repeaters.* There has been a slow reduction during the last decade in first grade repetition from almost 50% in 1980 to 42% in 1990. At the current rate repetition will cease to be a problem only forty years from now.

High repetition, especially in the lowest grades, is mainly a proxy for inadequate learning, as defined by teachers, brought about by low quality of the inputs into the system. The relationship between repetition and learning is not univariate; in fact as learning increases, teachers set higher passing standards. Unless specific policies are set, repetition does not decrease in direct proportion to increased learning. There continues to be serious under-reporting of repetition in official statistics. Government policies may not have targeted repetition as a key educational problem due to such misleading information. Repetition as identified through the UNESCO special survey is almost twice as high as the level reported in official statistics.

Simple statistical comparisons help identify the problems of some LAC countries. For example, compared to its GNP per capita, Brazil is a striking outlier in terms of the weakness of its primary school system. Both Brazil and Venezuela have particularly high differences in the educational attainment of higher income compared to lower income children. Haiti, Guatemala, El Salvador, Honduras and Nicaragua are among the poorest countries, and have the weakest primary school systems. Bolivia has unusually low student teacher ratios and unusually high dropout rates, especially in rural areas. Jamaica, Chile, Uruguay, and Colombia appear to be solving the problem of excessive repetition in primary school, but as yet there is little information on whether learning increased.

Early Childhood Development

Its Importance. The justifications for investing in early childhood development are both scientific and economic. The early years of life are critical in the formation of intelligence, personality, and social behavior, and the effects of early neglect can be cumulative. Economic returns include: increased cost savings to society through reductions in dropout, repetition and remedial programs in primary education; reduced inequalities, since children living in conditions of poverty and/or discrimination often fall behind their more fortunate peers in some aspects of their development at an early age; and possible long term positive effects such as reduced delinquency and unemployment. *Given the increasing evidence of the importance of early childhood development, future strategies for primary schooling should include support for programs of early childhood development.*

The Current Situation. Early childhood development programs vary greatly in type and age group, ranging from non-formal home day care to formal pre-schooling and serving children from ages 0-6. Enrollment in all such programs increased rapidly during the 1980's despite the economic crisis as a result of increased female labor force participation, changes in family characteristics, and increased awareness by parents of the importance of early child development programs. The unit costs of formal pre-schooling are similar to the costs of primary education; however, non-formal programs utilizing mothers, professional supervisors, and private homes are much less costly than formal programs. With good supervision these programs can be of adequate quality. Urban dwellers and higher income groups have much greater access to pre-schooling than poorer and rural populations.

Strategies for Reform. As an investment, the long term returns to early childhood development are as high or higher than any other investment in human or physical resources. Nonetheless, given the pressure on government finances, least cost solutions should be sought.

Public support of pre-schooling should be directed to lower income and at-risk children, especially those at risk for dropout or delinquency. The middle and upper classes should cover all of the costs of pre-schooling for their own children. Since one of the goals of pre-schooling

is to make it easier for mothers to work and therefore, increase their income, even programs directed at the poorest segments of society should have elements of cost-recovery often through in-kind services provided by parents.

Exclusively public sector provision of early childhood programs should be kept to a minimum. Instead partnerships of governments, NGO's, and communities should be encouraged whenever possible. Informal programs such as the "hogares comunitarios" in Colombia have much lower salary and investment costs than formal programs. Non-formal education based on mass media, the distribution of printed materials and group sessions animated by a local contact may cost one third or one fifth of the unit cost in primary education. Initial education through parents, as in Mexico, is another low cost approach.

Strategies for early childhood development should also include: encouraging a variety of models and types of programs; integrating education, nutrition, and health contents of programs; including child development themes in education, health and nutrition programs; improving training of caregivers; collaborating among government and private groups; and adequately assessing and evaluating programs.

Teachers and Their Classroom Behavior

The Current Situation. Teachers are fundamental since it is their behavior which eventually results in classroom learning. Teachers are also the costliest inputs into the system, accounting in many countries for 95% of the education budget. Average teacher salaries have gone down significantly over the last ten years, but it is not clear whether teachers have suffered more than other civil servants or more than comparable occupations. Average student teacher ratios have gone down from 32:1 to 29:1 over the past decade. The research literature suggests that marginally reducing student teacher ratios does not improve learning.

In most LAC classrooms, teaching is almost invariably undertaken through presenting expository material to the entire class--often through writing the content of the lesson, or explanations, on the blackboard, which is then copied by children. In many cases the exposition is inadequately structured and sequenced, and the teacher may not stop to seek feedback from students to adjust the presentation based on their responses. Alternative teaching/learning methods, such as small group instruction, cooperative student learning, individual instruction, group problem solving and decision making, free writing, etc., are rarely used. At the higher levels of primary education and in secondary education, classroom discipline may be a problem, often a result of the teachers' own lack of capacity to define objectives and his/her inadequate classroom management skills. In many public systems, teacher morale can be very low because of a combination of low salaries, excessive bureaucracy, and political appointments to administrative jobs.

The amount of time available for classroom teaching in LAC is inadequate, a result of a combination of excessive time spent in classroom on routine, bureaucratic procedures, a very short school day (less than three and a half hours in many urban schools, on double or triple shifts), strikes which may last a month or longer and are often not fully made up, teacher absences for sickness and other reasons, and student absences. While the official calendar is usually about 180 days, the actual time in school may often approach 120 days because of holidays, strikes and teacher absences.

Strategies for Reform. Five new teaching strategies need to be established in LAC. The first is that of *audience and context specific instruction*. Modern pedagogical research in the developed world has emphasized the complexity of the teaching process. Even within the same class, what constitutes effective instruction will vary according to subject matter, group size and composition, and specific instructional objectives being pursued. In LAC, the age and background heterogeneity of many classrooms, especially in rural areas, as well as practices such as leaving school because of harvest time, family crises, temporary absences of adults, and informal work opportunities, suggests the importance of small group work, especially in lower grades. However, the fundamental issue is not to utilize a single teaching strategy, but rather to make teachers aware of the situational specific nature of the teaching learning process, to give them the tools and confidence to vary their teaching styles, and to ensure rigor and clarity in defining and implementing learning objectives. Given ingrained current practices, step by step student learning guides and focused in-service training are fundamental to help change teachers' pedagogical practices.

Secondly, there is no longer any reason for rural schools which do not provide the full six years of primary education to continue to exist, since effective strategies for *multi-grade teaching* are now available. Multi-grade teaching requires suitable self-learning modules or textbooks, and one chalkboard on each wall for each of the groups working together. Training in multi-grade teaching must be carried out together with the distribution of self-learning textbooks. Third, *new strategies for teaching reading* must be implemented. Modern pedagogical theory emphasizes that literacy is not the formal understanding of certain fixed conventions and codes. Rather, literacy requires that children understand its social role-- as learning and as problem-solving. This requires that the classroom is transformed into a "literate environment," where children, surrounded by written materials, find it natural to want to learn to read. Fourth, 10% of the school age population in Latin America speak an indigenous language at home. When most of the first grade students speak Spanish, the non-Spanish speakers may learn from their classmates very quickly and there is no need to use the *bilingual approach*. But when the native language is spoken for informal communication among students, then the bilingual approach is required for learning to match the new signs with the well known sounds and meanings.

A fifth approach is that of *flexible promotion*. When teachers are adequately trained and educational materials provided, they can be encouraged to take a developmental approach to learning and to promote a greater number of students. In Colombia, the *escuela nueva* schools feature multi-grade teaching and promotion to the next grade once a student has achieved minimum educational objectives. Teachers are trained to teach children at different levels of academic achievement in the same class. Similar successful packages of in-service training, provision of materials, and encouragement of promotion have been implemented in Chile, Jamaica and Uruguay, where first grade repetition has been reduced to less than 10%. When they do not form part of an integrated package of quality inputs, bureaucratically mandated promotion requirements are not accepted by teachers, as has been the case in Venezuela, Costa Rica and Sao Paulo/Minas Gerais in Brazil.

Improvements in pre-service training should focus on selecting motivated and higher achieving students and on increased active learning of student/teachers. The length of pre-service training should be reduced and supervised practice teaching emphasized. In-service training should be targeted, hands-on attempts at changing specific classroom behaviors, based on observations of current pedagogical practices. This could include, for example, teaching teachers how to use new textbooks and learning materials, teaching them specifically how to manage multi-grade classes, and observation of successful "audience specific" instructional practices.

Several programs in LAC have achieved, at reasonable cost, significant improvements in learning. The *escuela nueva* in Colombia, an example of a modern school in a rural setting, is operating well in 10,000 schools. Another system which works well is *Fé y Alegría*, a private Catholic school system operating mainly in Venezuela, Peru, and Bolivia and directed at poor children. *These programs are based on strong management, an integration of in-service training and educational materials and motivational strategies.* Pilot projects fail if they are expanded too rapidly, do not provide the complete necessary package of inputs, or lack continuous support from the top, as has been the case up to now of the *ciclo basico* reform program in Brazil.

Textbooks and Teaching Materials

Their Importance. The availability of textbooks and other educational materials is one of the fundamental factors for educational quality and academic achievement at the primary level. *Educational materials are highly cost-effective.* A study in Northeast Brazil showed that for every dollar invested in textbooks and other educational materials, four dollars were saved through reduced repetition and increased student flow efficiency.

The Current Situation. Despite the growing evidence, only Mexico and Chile, among ten LAC countries studied, finance with public funds more than 50% of the costs of textbooks. Case studies of Brazil, Costa Rica, and Venezuela have shown major declines in the public

financing of textbooks over the past ten years. At the same time the provision of textbooks in many countries suffers from poor management, inadequate evaluation and selection, inappropriate physical specifications, poor content quality of textbooks, many of which do not incorporate modern pedagogical practices, are not linked with the curriculum, and do not provide adequate guidance to teachers, and unclear definitions of the respective roles public and private sectors play in the supply of educational materials.

A Strategy for Reform. Of foremost importance is a long term and uncompromising commitment at the highest levels to adequate public financing. As a minimum target, at the primary level governments should strive for one textbook in reading and one in mathematics per student, a classroom library consisting of two books per student, and in the later years of primary education, additional textbooks (perhaps at a 2:1 ratio) in social and physical science. *This minimum textbook and supplementary educational materials program at the primary level would cost roughly US\$5 per student per year, or about 4% of average estimated primary unit costs of US\$ 118 (1989).* A commitment to adequate financing is a necessary but not sufficient means of increasing learning. Textbooks must be effectively used. It is therefore fundamental to integrate in-service teacher training with textbook provision, and to improve the content quality of textbooks.

While Mexico has certainly demonstrated that nationalized printing facilities can produce massive quantities of textbooks, in most of LAC private printers may be better situated to balance textbook physical quality, quantity and price for the most economical solution on a sustainable basis. There is also a clear need to substantially improve the content quality as well as the physical specifications of textbooks in LAC. There should be clear, transparent, routine, and deadline-bound textbook selection, procurement and distribution procedures. Textbooks should be used for several years. The increased up front costs to produce more durable textbooks will save money over the long run, provided schools implement adequate conservation and repair practices. Finally, parents should be asked to provide a portion of the financing of textbooks, as a means of encouraging a sense of ownership and of ensuring that schools have a source of financing for purchasing supplementary materials.

In many modern classrooms, teachers use a combination of self-learning modules and materials to teach reading, writing, and arithmetic. The provision of teaching/learning materials in LAC, therefore, should gradually move from single textbooks towards a combination of textbooks, workbooks, library materials, and the means (photo-copiers, word processors, etc.) whereby teachers can create their own materials.

The Financing of Primary Education

The Current Situation. Compared to other developing country regions, Latin America spends a similar share of GNP on education, but a much smaller share of it on primary education. For example, LAC's expenditure on education expressed as a percentage of its GNP

is approximately equal to the Asian "Newly Industrializing Countries", yet when differentiated by level, only 1.1% of its GNP goes towards primary education compared to an average of 1.5% in the NICs. Compared with industrialized countries which spend 1.8% of GNP on primary education and significantly more on education as a whole, LAC lags behind by an even larger margin.

During the period of economic stringency of the 1980's, primary education suffered in terms of the real amounts of funding going to the sub-sector. With the exception of Chile, in every country surveyed, unit expenditures decreased significantly. In most of the countries surveyed, public funding of textbooks and teaching material declined significantly, and teachers' salaries declined at the same time that student ratios declined. The demographic transition in LAC means that most LAC countries, with the exceptions of Nicaragua, Guatemala, Honduras, Paraguay and Haiti, will not face major increases in demand for primary schooling. Since quantitative deficits will be less pressing, it may be possible to focus on qualitative issues.

Strategies for Financing Primary Education. An appropriate approach to public financing of primary education would be to agree that support for primary education is of the highest importance and therefore primary education will be protected to the extent possible from economic and financial downturns. In turn, this approach suggests that other areas are not of highest priority and that private sources of funding will be sought for other social sectors, when public funds are inadequate to satisfy all social needs and demands. Chile is following this policy, but the extent to which other countries have made similar commitments is not clear.

The second element of this approach is to focus, within the primary education sub-sector, on children's needs and on improving the learning environment, rather than on bureaucratic or other intermediary clients. *In particular this means increasing financing of textbooks and teaching materials from the current average of less than \$2 per student to at least \$5 per student.* Parents should be asked to contribute to the costs of teaching materials, mainly as a means of ensuring a sense of ownership and responsibility as well as a way of helping to ensure some school based funds.

Public financing of preschool should start with the most deprived children in the urban and rural slums; and governments should resist middle class pressures for general support of pre-schooling. Governments should seek least cost solutions, which emphasize private sector provision of services and non-formal alternatives. If public funds go only to the poorest 25% of children, parents pay 25% of this amount, and private non-formal alternatives are emphasized, then the additional cost to government would be about \$14 per student (13% of unit expenditures).

One week of effective in-service training should be provided to all teachers on an annual basis, at a cost of US\$7 per student. At the same time, governments should take efforts to ensure that real teacher salaries do not further deteriorate, consistent with overall country

economic situations. Real increases in teacher salaries could be accompanied by steps to ensure better teaching/learning, such as agreements to increase the length of the school day or year.

At-risk students who are located in the most deprived regions: rural areas, indigenous groups, and the urban marginal poor, have repetition rates twice as high as the national averages. Improvements in school quality should be targeted to these students. Targeting is important because the difference between achievement levels of deprived and wealthy students in Latin American countries is larger than the difference between wealthy students in Latin American countries and in developed countries. Good examples of targeting include Chile's "900 Schools" and "Pedagogical Decentralization" programs.

Governments should allocate a significant portion of the primary education budget to research, information systems, and support of pilot programs. The majority of these funds should go to non-profit groups operating outside of the government and for training.

The management of education systems is inefficient in some countries in the region. Administrative costs are often high; at the same time systems of supervision and control are ineffective. The result is wasted resources, which could be used to improve primary education quality. Strategies to utilize public funds more efficiently include firing redundant staff and "ghost" teachers and administrators and more efficient use of teachers. Current experiments in decentralization and in private sector provision of services may eventually result in more efficient and effective use of public funds. Overall improvements in financial efficiency, mainly through effective use of teachers and through firing redundant staff, could result in a savings of about US\$5 per student.

The net additional costs to government of these quality improvement programs, coupled with some savings, would be about US\$17 per student, or an increase of 15% in estimated unit expenditures of US \$118. An investment of this sort would result in significant reduction in repetition as well as increased learning. Per graduate costs would be reduced, but total system costs would increase, since the number of students completing the sixth grade rather than dropping out would also increase significantly.

To achieve proposed financial and other changes it will be essential to build a consensus for change. In particular, political and educational leaders will need to convince the population of the need for long term investment rather than short term goals. The new focus should be on children as the client and on learning as the objective rather than on intermediate clients such as teachers, administrators, and parents or non-educational goals such as school feeding, income transfer and political partisanship.

Using Information for Decision Making

Today's educational statistics systems measure an excessively narrow range of school inputs. *Implementing reform will require a better system of monitoring educational progress which emphasizes the use of quality indicators such as availability of textbooks and teaching materials, the real number of teaching days and hours, and actual pedagogical practices at the classroom level.* In addition, since it has been shown that for reform to work and output to be improved, inputs must be both simultaneous and complementary, education planners and leaders should specifically identify and agree on the minimum acceptable package of education inputs and services, which should be fully provided to schools, and the statistical system should track the provision of this package of inputs.

There is a growing interest in educational assessments but up to now they have been inadequately planned and implemented. Recommended strategies include: focusing on the ultimate users and on dissemination, using samples rather than universes, and supporting non-profit autonomous testing agencies rather than building up government bureaucracies.

Research priorities, which should be defined nationally on a consensus basis, could include: evaluating a variety of basic, applied, developmental, prototype, and small-scale innovations; creating strong formative evaluation programs; increasing "ethnographic studies" of classroom interactions; implementing longitudinal studies measuring the "value added" of school interventions; and supporting studies which rank educational innovations in terms of cost effectiveness. Governments should support the institutional strengthening of non-profit independent research and agencies.

I

Introduction

Objectives and Content of This Report

The main objectives of this report are to take stock of progress to date in Latin America and the Caribbean (LAC)¹ in improving primary education quality and to provide guidance to LAC countries in their future schooling investments. The report builds on the analytical work done by the World Bank leading to the Jomtien Conference on Education for All held in 1990, especially the book, **Improving Primary Education in Developing Countries**, by Marlaine Lockheed and Adriaan Verspoor, and the Bank's sector policy paper on primary education. The report analyzes new information on LAC and provides a region-wide framework. While certainly other educational issues are of importance, primary education should continue to remain the major priority in education for LAC for at least the next decade. With this in mind, this report documents the nature of the long term challenge, emphasizes the importance of keeping to the course, and recommends revised and deepened strategies to improve the design of primary education programs in the region.

Given the scope of the issues, the report has limited specific objectives. The first is to review our knowledge of the outputs of primary education in LAC, in terms of learning and school completion, and the relationships between primary education inputs and outputs. The second objective is to review issues and identify appropriate region-wide strategies for managing three fundamental elements of primary education: preschooling textbooks and teaching materials, and the classroom behavior of teachers. The third objective is to review issues and identify appropriate strategies for the financing of primary education and for monitoring progress in the system. The report does not cover in detail issues in educational management, except to some extent with regard to financial management. A paper to be prepared next year by the Technical Department of the Latin American Regional Office of the World Bank will review issues related to educational management including decentralization.

¹ Latin American and Caribbean countries included in this study include Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Panama, Paraguay, Peru, Uruguay, and Venezuela, unless otherwise noted.

The rest of this report consists of seven sections. The first section summarizes where Latin America stands in terms of the output of the primary education system. Output is measured in two ways--through standard statistical measures of repetition and completion rates, and through data on learning achievement. The second section summarizes what we currently know about the relationships between the inputs of primary education and the outputs, in terms of learning and school repetition and completion. The subsequent three sections examine issues, trends, and possible strategies related to pre-schooling, teaching materials, and teachers. Another section examines trends, issues, and possible strategies in the financing of primary education in LAC. A final section discusses issues and strategies for using information for decision-making in primary education. Each of these sections attempts to identify trends and issues and to propose strategies for action.

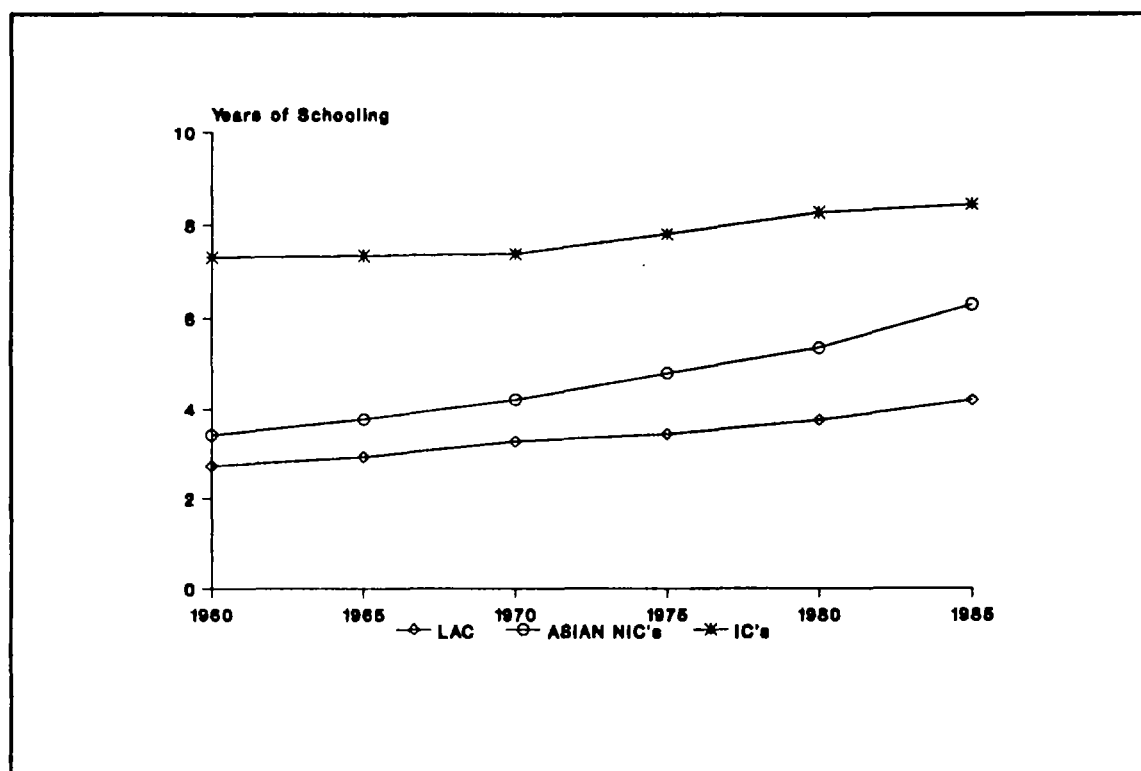
The Challenge of Improving Primary Education in LAC

At the outset the reasons for investing in primary education should be repeated. There is now much literature which documents the importance of primary education in economic development (Schultz, 1961; Krueger, 1968). Research has shown a high correlation between national investment in education and economic growth. Virtually all of the newly industrialized economies of the past twenty five years, such as Hong Kong, Israel, Japan, the Republic of Korea, achieved universal or almost universal primary enrollment by 1965 and since then significantly increased their populations' average years of schooling. A broad base of an educated population appears to be a necessary (but not sufficient) pre-condition to current and future economic development. Education has been found to strongly influence farmer productivity (Lockheed, et. al., 1980), to encourage reduced fertility and result in improved health and nutrition (Cochrane, et. al., 1980), and to encourage more "modern" attitudes--those related to adopting rational, empirical and egalitarian beliefs, which are a recognition for functioning effectively in the political and economic situations required for development (Scribner and Cole, 1981). There are high social returns to primary education throughout the world. A recent update of economic returns to education by level of education in LAC has shown that, in fourteen countries surveyed, the social rate of return to primary education averaged over 17% (Psacharopoulos and Ying, 1992).

Furthermore at the outset it should be said that, compared to its level of economic development, LAC may not be getting adequate results in primary education compared to other regions. The average years of schooling in LAC is 4.2 years (1985) while its literacy rate is 84 percent (1990). In comparison the Asian Newly Industrialized Countries (NIC'S)² have an average of 6.3 years of schooling and a literacy rate of 94 percent.

² Countries referred to as Asian NIC'S in this country are Hong Kong, Republic of Korea, Singapore, Malaysia, Thailand, and Taiwan (when information was available).

Figure 1.1: Average Years of Schooling: LAC, Asian NIC's, and IC's³



Source: R. Barro and J. Lee. "International Comparisons of Educational Attainment." Paper presented at conference "How do National Policies Affect Long-Run Growth," The World Bank, February, 1993.

As shown in Figure 1.1, even in 1960, when the NIC per capita income was lower than LAC countries, the average years of schooling was higher. Since then, the average number of years of schooling has been increasing much faster among the Asian NIC's than in LAC. Although LAC has shown persistent improvement over the twenty-five year period, it has not been able to significantly lessen its gap with industrialized countries (IC's). At the present rate of improvement, the Asian NIC's will be able to "catch-up" with the IC's in the not so distant future, yet LAC will continue to lag behind at its current distance. In primary education, in LAC about 66% of students complete primary education. In comparison current completion

³ In this study the United States, Japan, and the former West Germany are defined as Industrialized Countries (IC's).

rates in selected Asian countries are as follows: Korea 98%; Malaysia 97%; Sri Lanka 85%; Thailand 80%; and China 68% (Tan and Mingat, 1992).

Over the past ten years LAC countries appear to have recognized the importance of investment in primary education. One measure of such interest is that of the growth of international lending for primary education development. World Bank lending for primary education in LAC has increased from an average of US\$20 million per year in 1985-90 to an expected US\$500 million per year in 1991-95. Loans totaling over US\$1 billion were recently signed in Mexico, Brazil, and Chile. New loans are being prepared or are already underway in the Dominican Republic, Haiti, El Salvador, Honduras, Costa Rica, Ecuador, Belize, Brazil, Bolivia, Venezuela, and Colombia.

Another measure of regional interest is the extent to which Ministers of Education have committed themselves to primary education quality improvement efforts. The Regional Office of UNESCO for Latin America and the Caribbean (UNESCO/OREALC) has taken the lead in supporting efforts at getting a regional consensus on primary education quality improvement, as a consequence of the Education for All Conference held in Jomtien. UNESCO/OREALC sponsors regional biannual meetings, where the emphasis in the last two meetings has been on primary education quality; it publishes a periodical on primary education, the "Major Project in Education"; sponsors a series of seminars and training programs on related educational planning and reform efforts; and has gathered a large amount of statistics which form the basis for much of this report.

In spite of the announced priorities as well as the increase in international lending, it is unclear how much of a financial, human resources and policy effort LAC countries are now making in primary education. It appears that public expenditure on primary education per student in America and the Caribbean (LAC) increased in real terms between 1970 and 1980, but decreased significantly between 1980 and 1990. Furthermore, the ratio in LAC of unit costs in primary education to GDP per capita of 6% is lower than Korea (16%), Malaysia (14%), Thailand (15%), but about equal to China, Bangladesh, India, and Sri Lanka (Tan and Mingat, 1992). Some countries appear to be neglecting key elements of primary education, such as the provision of textbooks and teaching materials. A renewed effort is of particular importance since many countries are now resuming economic growth; and we can expect them to have additional financial resources to invest in the social sectors.

II

The Output of Primary Education in LAC: Learning, School Completion, and Repetition

Gross primary school enrollment ratios are over 90% in most LAC countries (Annex Table 4). The countries which continue to provide an inadequate number of places for primary education students are Haiti, the Dominican Republic, El Salvador, and Guatemala. With the exception of isolated rural areas and some urban peripheries, the other nations in the region have achieved the quantitative goal of having enough physical places in primary education to serve the school age population. For all countries in LAC, primary education continues to be beset by inadequate achievement and high repetition rates and continues to lag when compared not only with developed countries but also with many countries in Asia with similar levels of per capita income.

This chapter summarizes the available information on LAC for two school output measurements -- comparative measures of learning achievement, and country by country data on repetition and completion. It also discusses the relationship between repetition and achievement.

A. Learning and Achievement in LAC

In the late 1980's, two LAC countries participated in the International Education Assessment (IEA) Study of Reading Literacy. In 1992, two cities in Brazil participated in the International Assessment of Educational Progress (IAEP) Test of Mathematics and Science. Also in 1992, five LAC countries participated in a pilot study of the Third International Mathematics and Science Study (TIMSS) of the IEA, which was partially financed by the World Bank. The earliest comparative study of achievement in LAC was the ECIEL test of Science and Mathematics conducted in the early 70's, covering nine LAC countries.

The IEA Study on Reading Literacy

Two LAC countries, Venezuela and Trinidad and Tobago, participated in the IEA study of reading literacy with the following results:

Table 2.1: The IEA Study of Reading Literacy, 1992

		Mean	Standard Deviation
LAC Countries	Trinidad and Tobago	451	79
	Venezuela	383	74
Other Countries	Finland	569	70
	United States	547	74
	Hong Kong	517	71
	Singapore	515	72
	Spain	504	78
	Ex West Germany	503	84
	Indonesia	394	59

Source: Elley, W.B. *How in the World do Students Read?*, The International Association for the Evaluation of Educational Achievement, 1992.

Nine year old students in Venezuela scored the lowest of the twenty seven participating countries, most of which were developed countries (the only other developing countries in the study were Indonesia and Trinidad & Tobago). Nearly a third of Venezuelan students scored at chance levels or below. The average student could respond correctly on short simple reading passages where the items required limited processing or where the answer was clearly stated in the passages. Only about 25% of Venezuelan students answered half the questions correctly and as a group, they scored far below the expected score based on an index of economic development. Indonesia scored at about the level of Venezuela. Trinidad & Tobago did significantly better than its counterparts in Venezuela, scoring more than half a deviation above Venezuela, but was still far behind developed countries.

The IAEP Study of Science and Mathematics Achievement (1992)

The International Assessment of Educational Progress (IAEP) tested thirteen year old students in nineteen countries. The cities of Sao Paulo and Fortaleza in Brazil were the only LAC participants. The developing countries in the study were Korea, Taiwan, Israel, Jordan, China and Mozambique. The results are as follows:

Table 2.2: The International Assessment of Educational Progress Test of Mathematics and Science, 1992

Country	Mean	Standard Deviation	Other Countries	Mean	Standard Deviation
Math Test					
Sao Paulo, Brazil	37	0.8	Korea	73	0.6
Fortaleza, Brazil	32	0.6	Taiwan	73	0.7
			Spain	55	0.8
			United States	55	1.0
			Portugal	48	0.8
			Maputo and Beira, Mozambique	28	0.3
Science Test					
Sao Paulo, Brazil	53	0.6	Korea	78	0.5
Fortaleza, Brazil	46	0.6	Taiwan	76	0.4
			Spain	68	0.6
			United States	67	1.0
			Portugal	63	0.8

Source: ETS. *The International Assessment of Educational Progress: Learning Mathematics*. Princeton. 1992.

On this test the two Brazilian cities scored slightly higher than Mozambique but were far behind the developed countries. The Brazilian cities also scored far below the Asian countries which participated in the survey. The top performing 5% of children in these two Brazilian cities scored no higher than the average score in countries such as Korea, Taiwan, Switzerland, Soviet Union, Hungary, and France. The lowest performing schools in Brazil scored no higher than at the chance level (ETS, 1992).

The TIMSS Pilot Study of Achievement in Five LAC Countries (1992)⁴

The recently completed TIMSS pilot study of science and mathematics achievement among thirteen year old students in five LAC countries is of particular interest because in each of the five LAC countries a sample was taken of four types of schools, ranging from elite private schools to rural public schools. The results are reported below. The national averages

⁴ This section is based on a background report prepared by Richard Wolfe and Eduardo Luna.

for Thailand and the U.S.A., based on the previous IEA science and mathematics study, which used the same questions, are included for comparative purposes:

Table 2.3: The Third International Mathematics and Science Pilot Study, 1992

School Type	Mathematics				Science			
	1	2	3	4	1	2	3	4
LAC Countries								
Argentina	50	41	33	29	45	43	37	28
Colombia	66	32	27	35	47	29	36	37
Costa Rica	72	59	44	43	66	59	50	50
Dominican Rep.	60	41	29	31	52	38	29	29
Venezuela	44	29	55	33	55	38	37	35
Other Countries								
	(National Average)				(National Average)			
Thailand	50				55			
U.S.A	52				55			

Source: Luna, E. and R. Wolfe. "A Feasibility Report on the Assessment of Mathematics and Science Education in Latin America." Mimeo, Technical Department, Latin America and the Caribbean Region, The World Bank. 1993.

- 1 Elite Private Schools
 2 Lower Class Private or Upper Class Public
 3 Lower Class Public
 4 Rural Public

Note: Scores for Thailand and the U.S.A. from Garden, R. and D. Robitaille. 1989. The IEA Study of Mathematics II: Contexts and Outcomes of School Mathematics. Oxford: Pergamon; and from Postlethwaite, T.N. and D. Wiley. 1992. The IEA Study of Science II: Science Achievement in Twenty-Three Countries. Oxford. Pergamon.

The samples were not scientifically selected and the number of students in each category of school ranged from 17 to 202, and averaged 70. Therefore the study should be considered as illustrative only. The results can be summarized as follows:

- Public schools, both urban and rural, in four of the five countries studied, do much worse than the average for the USA and Thailand. Rural public schools in four of the five countries do very poorly.
- The elite private schools in LAC do nearly as well or better than the national averages for the USA and Thailand. However, in science, in four of the five countries studied,

even the elite private schools do worse than the average score in the USA and Thailand. The non-elite private schools generally do only slightly better than the public schools.⁵

- Private schools overall account for only 13% of enrollments in LAC. Therefore the average scores for the countries surveyed are only slightly higher than the scores for the public schools.
- The scores for Costa Rica are much higher than in the other four LAC countries. This may well be a result of better teaching in this country. The possibility of flaws in the sample design would need to be studied before reaching a firm conclusion, however, the consistency of the results suggest that they may not be spurious. Similarly the score for urban public schools in Venezuela appears abnormally high; this is more than likely a result of a biased sample. e.g., exceptionally good mathematics programs in the three schools included in the sample.
- It should be noted that Thailand and the USA were in the mid-range of the international distribution in the original IEA survey. The national averages for Japan and Korea, for example, are over 60.

Conclusions

The studies described above show the following consistent results:

- LAC countries do significantly worse in terms of achievement than the developed world, and also do worse than many Asian countries.
- There is some evidence that the English speaking Caribbean does better than the Spanish speaking countries; as well, there is a possibility that achievement in Costa Rica may be higher than in other LAC countries.
- Elite private schools in LAC score significantly better than public schools. However, the non-elite private schools do only slightly better than the public schools.

⁵ A similar result has been reported in Chile (Prawda, 1992). Private schools in existence for over ten years (mainly elite schools) score much higher than new private schools, which in turn score only slightly better than public schools.

B. The Relationships between Repetition and Achievement

This section discusses the potential and identified relationships between repetition and achievement and cites the few studies which have looked at these relationships. This discussion is important because the UNESCO special survey of repetition rates shows that of the nine million six or seven year-olds entering first grade in Latin America, some four million of these children failed the first time around. Overall 29% of all primary students are repeating their grade each year; in first grade, 42% are repeating. Latin American countries spend US\$2.5 billion each year to teach these 20 million repeaters.

High repetition is mainly a proxy for inadequate learning, as defined by teachers, brought about by low quality of the inputs into the system. While high repetition is clearly a sign of low quality, low repetition does not necessarily mean that learning is taking place. The relationship between repetition and low achievement is not simple and it may vary from place to place and over time. Only a few studies have sought to clarify this relationship, and much additional work remains to be undertaken.

Repetition mainly reflects teachers' judgements on the academic achievement of students that are communicated in terms of performance indicators such as pass/fail marks or grades. First grade teachers generally follow a simple criterion of failing children who do not learn the basic rudiments of reading. The criteria for promotion do not appear to be particularly high. In many cases students may be promoted from first grade when they are able to relate "sign" with "sound", that is, when students can pronounce sounds corresponding to the written letters even if no meaning is attached to those sounds or written letters.

The relationship between repetition and achievement is not unvarying. Standards in very poor rural areas are more than likely lower than in middle-class urban areas and standards increase to some extent as learning increases. Fletcher and de Moura Castro (1986) found that, as reported by parents, lower-class children in Northeast Brazil achieved literacy after one year of schooling but remained in first grade for as much as three years. In comparison, higher income students in the South and Southwest became literate after six months of schooling but remained in first grade for an average of one and a half years. Fletcher and de Moura Castro conclude that as socio-economic status goes up, the chances of becoming literate more rapidly increase significantly; at the same time promotion standards go up at about half the rate that learning increases.

In the case of Colombian schools that have implemented the *escuela nueva* methods, repetition was reduced by 7%, but scores in Mathematics and Spanish (of students advancing much faster than in traditional schools) improved by one third (Schiefelbein, 1991). This is also indirect evidence that increased quality of instruction resulted in higher standards as well as increased learning.

In the rural Northeast of Brazil, Harbison and Hanushek (1992) show that there seems to be little relationship between learning and grade passing. However, as noted by Ribeiro and Klein, this may in part be a result of the practice in the Northeast of having a first grade "a" and "b". Children who complete the "a" class go on to the "b". This statistical problem is becoming less serious in the Northeast since many of these children are now being reported as being in "pre-school." Unfortunately many of these pre-schoolers are eight or older! It may also be a by-product of the extremely low quality of instruction in the rural Northeast and of the fact that most of the schools are one room ungraded classrooms in which children have little idea of which grade they are in, and in which the teaching is extremely poor. Improvement in that educational context is probably a function of overall intellectual and social development rather than a function of specific instruction.

Repetition may also be generated by higher standards set up in elite schools wishing to maintain their national or regional prestige. Repeaters in those elite schools would usually have higher achievement levels than students promoted in the rest of the system. In the upper primary grades in Colombia, repetition in some cases may be higher for students in the upper, since those students are seeking to be accepted into the best secondary schools. These repeating students may even have higher income levels than non-repeaters (Psacharopoulos and Velez, forthcoming). However this is not common throughout Latin America, and tends to occur mostly at the secondary level. It is quite common in Africa, where last year repetition of primary school is quite high (Schwille, et. al. 1991).

A recent study comparing private Catholic schools (*Fé y Alegría*) in Venezuela with similar public schools showed that, while the repetition rates were roughly similar, achievement in the *Fé y Alegría* was significantly higher. This means that these schools have deliberately established a high standard system, which results in no flow rate improvements but in achievement gains. In this example repetition in *Fé y Alegría* schools appears to be used creatively as a means of providing special and individualized instruction to the poorer students (Herrera, 1993).

All children with an adequate level of achievement are not necessarily promoted. In Honduras about 80% of students with passing grades in their subject were promoted to the next grade the following year, but 20% of children with passing grades did not get promoted (McGinn et.al. 1991). The explanation for this result must be that the teacher, as well as possibly the parent, believes that these children are not socially or physically mature enough to proceed to the next grade. This study should be replicated to determine whether the Honduras situation occurs in other contexts.

Latin America has generally been successful in providing an adequate gross physical infrastructure (e.g., a reasonable physical facility, chairs, and desks). However, in some rural areas, the distances from incomplete to complete primary schools may be so great that graduates of these incomplete schools are unable to continue their education. Teachers may keep those

good students in the last grade of the incomplete school and even work with them on additional curricular topics (covering the content of one or even more additional grades) on a personal basis. These students are reported as enrolled (usually as repeaters) in the last grade of the school. No empirical data are available to estimate the magnitude of this type of arrangement in Latin American countries, but it might be related to the number of incomplete schools and to possibilities for moving into neighboring villages.

The "Culture" of Repetition

It has been alleged that teachers simply fail a given (or agreed) percentage of students and, therefore, even if learning were increased, teachers would keep on failing the same percentage. The Colombia and Brazil cases cited above give at least some credence to this assertion. In addition it has been reported that repetition rates in Brazil have changed only marginally since the 1930's (Costa Ribeiro, 1991).

Pre-service teacher training in Latin America may well encourage rigid standards which result in failing. Its basis is the German and French Normal Schools of the turn of the century, which emphasized that a professional teacher should only promote students able to perform at the expected level. This non-stated (but deeply accepted) norm may explain that "automatic promotion" norms applied in the 1960's and 1970's in Costa Rica, Chile, Venezuela could not eliminate repetition, until other policies were implemented.⁶ Even though many school principals of those countries reported zero repetition at that time, they encouraged temporary dropout before the final exam period, forced students not to return after the harvest period, or convinced parents to keep "non-matured" children in the same grade.

In contrast, most English speaking countries in the Caribbean, such as Jamaica, have a policy of "promotion by age", with a result that repetition and dropout are quite low. However, tests of achievement in Jamaica have indicated that somewhere between 31% and 48% of primary school graduates are functionally illiterate (defined as reading comprehension at the fourth grade level) (CIDA/CODE, 1989). Based on the IEA study of reading, Trinidad and Tobago, which also has low repetition rates, has been more successful in educating its population than Venezuela. However, its success could be due to a variety of factors affecting quality, rather than solely or mainly its promotion policy.

⁶ "Automatic promotion" laws enacted in Venezuela, Chile, and Colombia cut the true repetition level by half. Principals reported zero repetition after the law was enacted but a careful analysis of enrollment by age showed that the laws did not eliminate repetition at all.

The Impact of Repetition on Achievement

High repetition in Latin America does not seem to have resulted in high achievement. As noted above, international comparisons of mathematics and science achievement show that LAC is far below the developed world and is lower than many Asian countries with similar per capita incomes. Furthermore, tests in several Latin American countries (e.g., Chile, Venezuela) reveal that many fourth or seventh grade students are not able to explain the meaning of simple phrases or to estimate the square meters of the classroom when length and width are given in integer numbers.

Disagreements over the value of repeating a grade are not restricted to the developing world. In the United States, overall, 18% of all children in the United States are held back at least one year through eighth grade. California holds back 1 in 10 children up to grade two. Although these ratios are far lower than those in Latin America, they are still the subject of impassioned debate as to their value. In the 1980's, repetition was encouraged as a way of "raising standards". There is now a movement back towards reducing repetition. This approach goes hand in hand with an increased emphasis on "developmental" learning. Those who opposed repetition, report that of 63 studies, 54 identified the long-term deleterious effects of holding children back. One study, for example, showed that held-back children were 18% worse in reading than equally low achievers who were not held back (Wall Street Journal, June 16, 1992, p.B1).

C. Current Trends in Repetition and Completion Rates

As noted above, the UNESCO special survey of repetition rates shows that of the nine million six or seven year-olds entering first grade in Latin America, some four million of these children failed the first time around. On average only 47% of entering students eventually complete the full primary school course. According to the UNESCO special survey, there has been a slow reduction during the last decade in first grade repetition from almost 50% in 1980 to 42% in 1990.

Overall, as can be seen in Table 2.4, based on the UNESCO special survey, neither the absolute number of repeaters nor the costs of repetition have decreased in the last fifteen years. There continue to be over 20 million repeaters in the first six grades of primary education in Latin American countries, and close to US\$2.5 billion in educational resources are used each year by those repeaters.⁷

⁷ These figures are computed with the SMMG model. The model is described in detail in E. Schiefelbein, "Repetition: The Key Issue in Latin American Primary Education," The World Bank, LATHR Division, June 1989. The foundations are presented in E. Schiefelbein and M.C. Grossi, "Statistical Report on Repetition in Latin America," Division of Statistics on Education, UNESCO, Paris, 1981.

Table 2.4: Numbers and Cost of Repeaters

	1975	1980	1988
Grade 1 repeaters (million)	6.8	6.8	7.9
Grade 6 repeaters (millions)	1.2	1.4	1.4
Grade 1-6 repeaters(millions)	17.7	20.3	20.8
Unit cost per student in primary (\$US) ¹	112.0	164.0	118.0
Total spent Grades 1-6 repeaters (\$US bil) ¹	1.9	3.3	2.5

¹ In constant 1990 dollars.

Source: UNESCO/OREALC and UNESCO Statistical Yearbook, Paris, 1990.

Table 2.5 summarizes other fundamental elements of primary education in LAC:

Table 2.5: Access, Repetition, and Completion Rates in Primary Schools

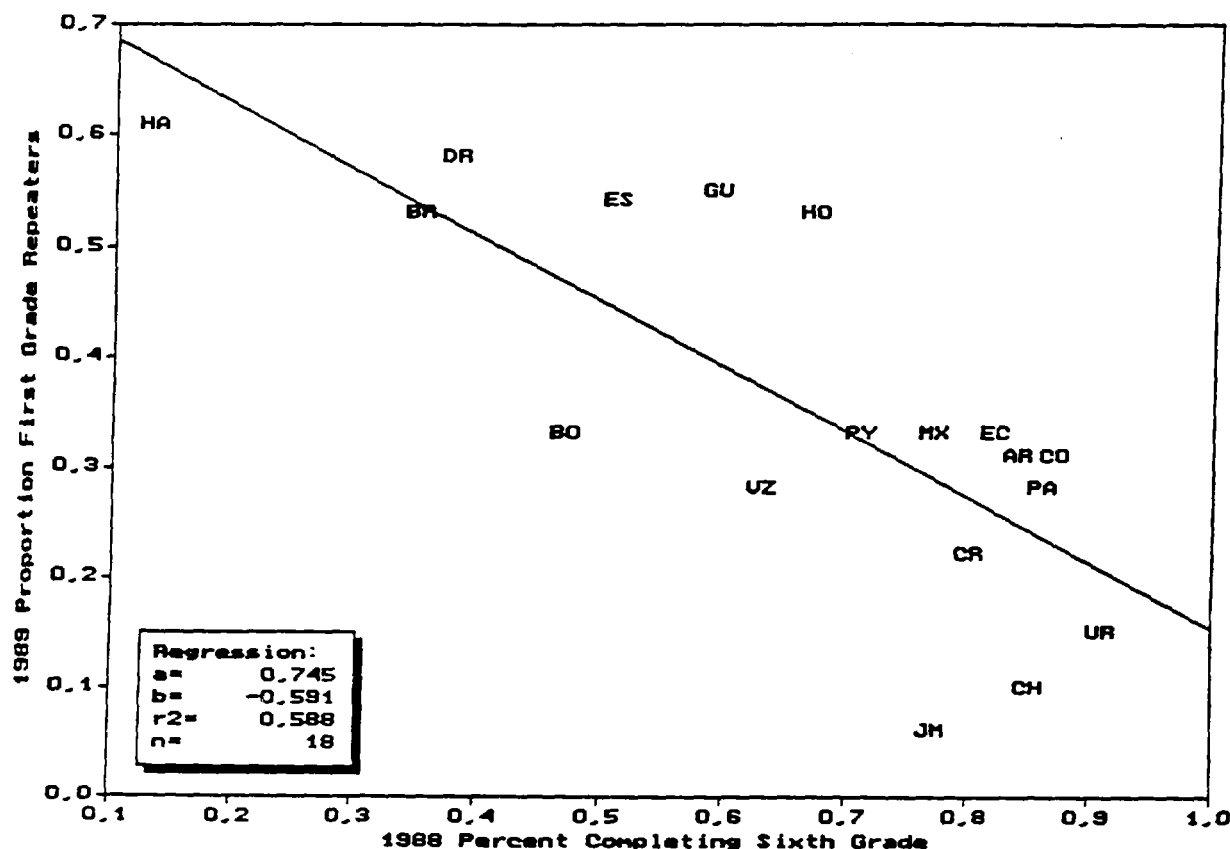
School Access (1989)	
On Time	66 %
Ever	90 %
Repeating grade 1	
1980	50 %
1985	48 %
1989	42 %
Repeating grade 2 (1989)	24 %
Repeating all grades (1989)	29 %
Years in Primary (1989)	6.7
Average Number of Grades Approved	5.0
% Graduating from grade 6	47 %

Source: UNESCO\OREALC

In LAC 90% of all children enter primary education. In Central America, only 81% of children enter first grade. Timely access is also inadequate in the region, except for the Caribbean. As the age of students increases the opportunity cost of remaining in school increases and students are therefore more likely to drop out. Students in Latin America, on average, remain 6.7 years in primary education and pass 5.0 grades. Therefore, repetition means that students will achieve 1.7 education grades less than the number of years of schooling.

Figure 2.1 plots average repetition rates in eighteen countries against completion rates. It shows that repetition is very highly negatively correlated with school completion. The outliers are Bolivia and Haiti where children apparently dropout early on rather than repeat a grade.

Figure 2.1: LAC Repetition and Completion Rates



Source: UNESCO-OREALC data base.

It makes sense for repetition to be highly correlated with low completion rates. As children get older they may become more able to work, and therefore the opportunity cost of remaining in school increases. Furthermore continually repeating is sure to lower their morale and sense of personal efficacy.

The number of first grade repeaters is twice as large as the number of second grade repeaters (7.4 vs. 3.5 million) and the first grade repetition rate is almost twice as high as the average repetition rate for grades 2-6 (42% vs. 24%). First grade repetition rates for Latin American countries have slowly decreased in the last decade. Overall, the decrease is on the

order of about 8% in the last decade. At this rate Latin American countries will reduce repetition to 10% in about 40 years, which appears to be an unacceptably long period of time.

Continued Under-Reporting of Repetition

There continues to be serious under-reporting of repetition in official statistics. Government policies may not have targeted repetition as a key educational problem due to such misleading information. Repetition as identified through the UNESCO special survey is almost twice as high as the level reported in official statistics. At the first grade level officially reported repetition is 22%, while actual repetition is 42%.

Field studies in El Salvador (Fernández, et. al., 1985), Dominican Republic (Diaz Santana and de Jesús Contreras, 1985), Colombia (Drysdale, 1970) and Honduras (Cuadra and Ewert, 1987) are especially revealing of how differences between reported repetition figures and reality are generated. In addition, a recent comparison of census information and school reporting in Brazil shows that new enrollments in first grade in 1987 in Brazil were approximately 3.2 million, compared to official school reporting of 4.7 million, with corresponding increases in actual repetition over officially reported repetition (Klein and Costa Ribeiro, 1992). These estimates closely corroborate the results of the UNESCO special survey.

There are four main causes of under-reporting. The first and apparently most prevalent reason is that students leave school to work in the harvest, or because of illness, or students transfer to other schools, but are reported as dropouts even though they return the following year to the same grade. In fact, in several countries, figures on repeaters plus dropouts are quite close to the estimated total number of repeaters. The second reason is that teachers have little time for extra work, and filling forms is not a priority. Therefore, many teachers fill in the data on repetition haphazardly and in case of doubt or poor memory, many repeaters are not reported. Sometimes, teachers simply don't answer and thus are not classified as having repeaters. Alternatively, the teacher may ask students "to raise their hands if they are repeating grade". Students not attending classes, or those that drop out and did not write their exams, may consider themselves as absentees and not as repeaters. The definitions printed by statisticians in the forms are read only by the most able and reliable teachers. Even those teachers to correctly report on data will face difficulties since many schools lack facilities or equipment for keeping administrative records. The third reason is that students may receive a passing score, but teachers believe that the student may benefit from repeating. Teachers will then ask his/her parents to enroll the student in the same grade in order to allow the child to "mature". That student will not be considered as a repeater, but as "re-enrolled" in the same grade. This situation has been documented in Honduras (McGinn, et. al. 1991). The fourth reason is that parents may present their children as new enrollees when they are forced out of a previous school for repeating more than once or twice, for bad behavior, or when parents

move. This cause may be particularly important in urban areas and for students enrolled in grade one.

Given the magnitude of the under-reporting of repetition, assistance and training is needed to help countries to estimate the true magnitude of the problem through computerized optimizing and simulation models. Operational definitions of the different types of repetition and related causes would need to be agreed upon by regional specialists.

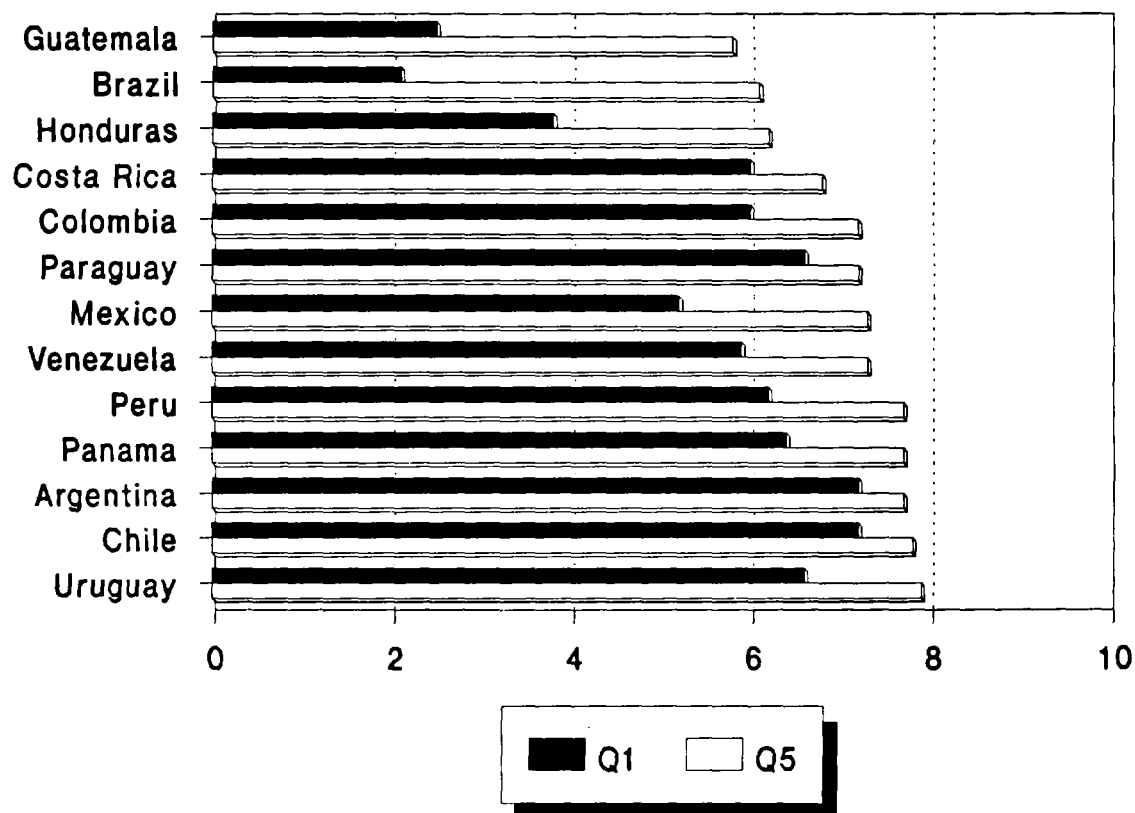
Who Repeats?

Poor Children. Repetition affects students from all socio-economic groups, but affects the most deprived students to the greatest extent. Simply put, the lower the education and income of the parents the more likely that the child will repeat a grade. Figure 2.2 summarizes information on the average years of schooling by socio-economic class for fourteen countries (See also Annex Table 2).

The figure shows that in all countries the highest income quintiles do far better than the lowest income quintiles. Brazil and Venezuela have the greatest discrepancies between these two quintiles (more than three times). Countries in which the discrepancy is between two and three times include Chile, Guatemala, Honduras, Peru, Panama and Uruguay. Countries performing relatively well on this equality of educational attainment index (discrepancy between one and two times) include Argentina, urban Bolivia, urban Colombia, Costa Rica, and Paraguay.

Rural and Non-Spanish Speaking Children. Among students from low socio-economic families, students living in isolated rural areas are more likely to repeat. Among this sub-group, children of indigenous groups speaking only their indigenous language are far more likely to repeat. The repetition problem is compounded by the poor communication between monolingual students and Spanish-speaking teachers. In the case of Chile, the highest rate of repetition corresponds to the province (Malleco) with the largest percentage of native population. The repetition rate in that province is twice as high as the national average (MINEDUC, 1990). In the case of Guatemala, being non-white is one of the most important variables explaining the dependent variable, "grades approved" (Rojas, 1991). A recent study has shown that indigenous children in Bolivia are twice as likely to repeat as non-indigenous children (Patrinós and Psacharopoulos, 1992).

Figure 2.2: Average Years of Schooling of Individuals Aged 15 by Highest and Lowest Income Quintile, 1989



Source: CEPAL. Household Survey Data.

Gender Differences. In seven countries with available data (Bolivia, Colombia, Chile, Ecuador, Venezuela, Panama, and Paraguay), there is little difference in repetition levels by gender, on average. Girls do about three percentage points better than boys, but differences among gender appear to be decreasing over time (Annex Table 3).

Age Heterogeneity. One by-product of repetition is increased age heterogeneity of students. Figure 2.3 summarizes the age distribution by grade. It shows that the average age of the first grade student, as well as the variance of the age distribution, increases (the average increment is close to one year of age). Age heterogeneity is a result of a combination of late

entry into first grade (two thirds of all children enter later than the official age of entry) accompanied by overage resulting from repetition. Age heterogeneity, which is particularly high in rural areas, may also adversely affect classroom learning, especially where teachers are using traditional methods of teaching.

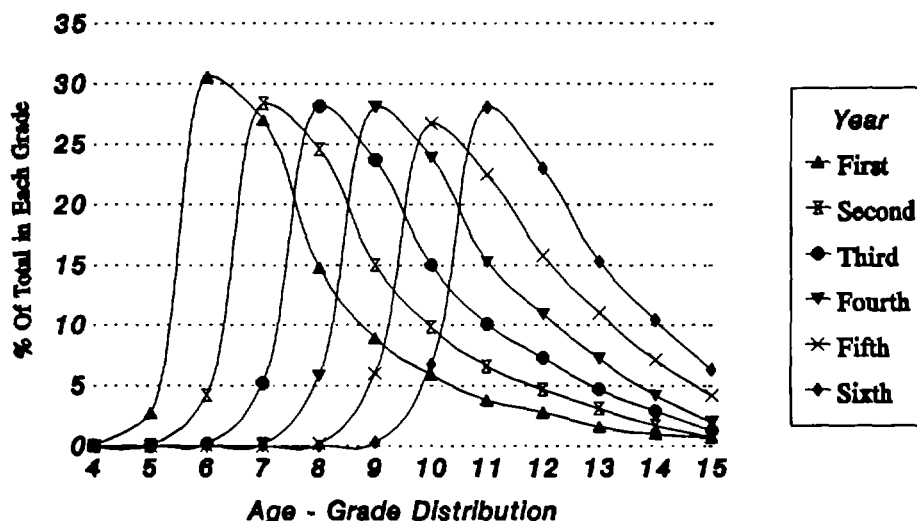
Country Differences and Trends

As can be seen in Figure 2.1 and Table 2.6, in terms of repetition and completion, LAC countries fall roughly into three clusters. The first cluster includes El Salvador, Honduras, Guatemala, Dominican Republic, Haiti, and Brazil, all of which have first grade repetition rates of 50% or more, and graduation rates generally no higher than 60%. Haiti, at 12%, has by far the lowest graduation rates. Honduras, Guatemala, El Salvador, and Haiti have had net increases in repetition over the decade, a likely result of economic and social dislocations.

It is striking that Brazil, with a per capita income of US\$2450, finds itself in the company of small poor Central American and Caribbean countries, none of which has a per capita income of greater than US\$1070. Within this group Brazil and the Dominican Republic were able to reduce first grade repetition by 14-18% over the decade. Brazil's repetition rate went from 62% to 53%. This may have been partly a result of implementation of the *ciclo basico* in Sao Paulo and Minas Gerais, which provides for automatic promotion between grades one and two.

The second cluster of countries--Bolivia, Ecuador, Paraguay, Panama, Costa Rica, Argentina, Mexico, and Venezuela--have first grade repetition rates of between 20 and 40%. Bolivia, Ecuador, and Mexico, have reduced repetition over the past decade by about six percentage points. This may have been caused by overall better training of teachers in developmental pedagogy as well as possibly through increased parental literacy. Colombia has achieved a very rapid reduction of repetition, from 53% in 1980, among the highest in the region, to 31% in 1989. Schiefelbein has reported that this reduction was a result of four factors: increased on time entrance in first grade; expansion of the *escuela nueva* program to a larger number of schools; automatic promotion established in 1989; and expansion of the "grade zero" concept which is fundamentally a year of pre-schooling.

Figure 2.3: LAC Distribution by Age and Grade (1988)
(in percent)



Source: UNESCO-OREALC, SIRI Regional data base, 1991.

With one exception the countries in this cluster all graduate 60%-80% of primary school entrants. Bolivia graduates only 47% of entering students, comparable to those countries with the highest first grade repetition rates. This may be a result of unique ethnic and cultural factors leading to high dropout rates.

Costa Rica has had a significant increase in repetition rates, from 13% in 1980, which was the lowest in the region, to 22% in 1989. This has been reported as the result of a decision by educational leaders to toughen passing requirements as a means of, at least in theory, encouraging increased learning. During this same period Costa Rica significantly reduced its financial support of primary education, especially in the provision of educational materials.⁸

⁸ In contrast, the TIMSS pilot study reported relatively high achievement in Costa Rica in science and mathematics.

**Table 2.6: Latin America and the Caribbean:
Repetition and Completion in Primary Education**

	Grades Included in Primary	Percent of First Grade Repeaters			Percent Graduating from 6th Grade	Percent Graduating from 6th Grade Without Repeating
		1980	1989	Change	1989	1989
Argentina	1 - 7	27	31	4	83	17
Bolivia	1 - 8	41	33	-8	47	9
Brazil	1 - 8	62	53	-9	34	1
Chile	1 - 8	24	10	-14	85	41
Colombia	1 - 5	55	31	-24	87	26
Costa Rica	1 - 6	13	22	9	79	31
Dom. Rep.	1 - 8	71	58	-13	38	3
Ecuador	1 - 6	40	33	-7	81	34
El Salvador	1 - 9	48	54	6	50	4
Guatemala	1 - 6	51	55	4	59	9
Haiti	1 - 6	53	61	8	12	1
Honduras	1 - 6	49	53	4	66	12
Jamaica	1 - 6	23	6	-17	76	52
Mexico	1 - 6	40	33	-7	77	23
Peru	1 - 6	24	28	4	76	21
Panama	1 - 6	..	..	..	86	33
Paraguay	1 - 6	34	33	-1	71	20
Uruguay	1 - 6	22	15	-7	91	54
Venezuela	1 - 9	33	28	-5	62	14
Weighted average for LAC		50	42	-8	47	10

Source: UNESCO - OREALC Data

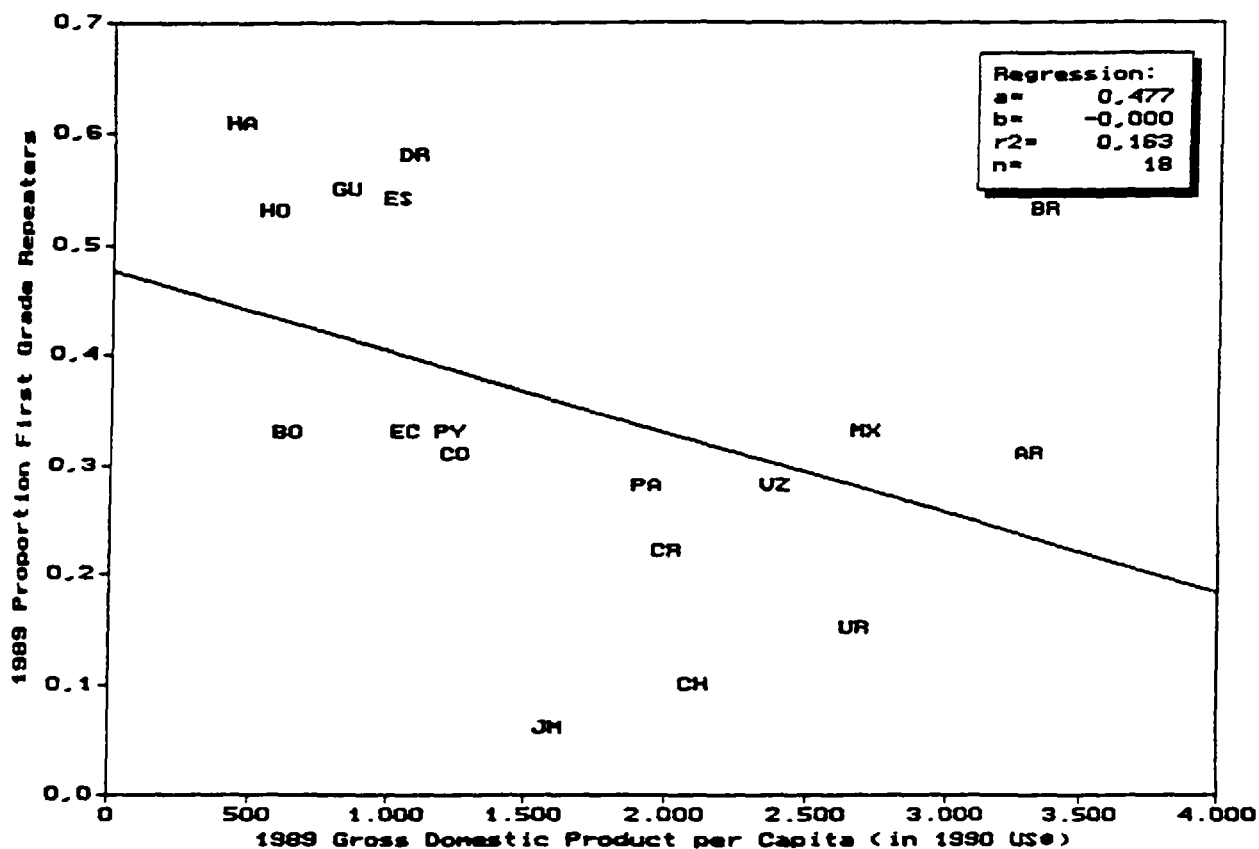
The third cluster of countries--Uruguay, Chile and Jamaica--repeat less than 15% of their first graders. These three countries were able to reduce repetition by 12 percentage points over the nine year period observed, the best record, with Colombia, among countries in the region. The programs in these three countries included a combination of encouragement of age-based or "flexible" promotion accompanied by strong in-service training and provision of educational materials. These three countries graduate more than 75% of entering students and nearly half of all graduates finished without having repeating the year.

Among all Latin American countries only Chile has comparative scores on student achievement over time (e.g., 1982 and 1988). Scores on the Sistema de Medición de Calidad de la Educación (SIMCE) examination in language and mathematics have been relatively constant in the past decade. This suggests that Chile's modified automatic promotion policy has neither adversely nor positively effected the achievement of sixth graders. While learning of primary school completers has not increased, the education system has become more cost efficient.

Table 2.6 also shows on-time access to first grade. With the exception of Argentina and Mexico, most countries are not enforcing regulations regarding age of entry into first grade with the result that teachers may face the problems of age heterogeneity from the start.

Figure 2.4 provides a graphical representation of the relationship of GDP per capita to first grade repetition. It shows that there is a surprisingly weak relationship between these two measures ($r^2 = 0.163$). Jamaica is the strongest outlier in one direction: e.g., low per-capita income and low repetition. Brazil is an outlier in the other direction: high per capita income and high repetition.

Figure 2.4: LAC First Grade Repetition and GDP per Capita



Source: UNESCO-OREALC data base.

Conclusions

The following conclusions can be drawn from this review of repetition in LAC:

- There has been a slow reduction during the last decade in first grade repetition from almost 50% in 1980 to 42% in 1990. At the current rate repetition will cease to be a problem forty years from now.
- There is indirect evidence in Chile that a comprehensive program of teacher training, educational materials and encouraging teachers to promote children has resulted in much lower repetition without adversely affecting learning. If this is true, then Chile has significantly added to the cost-effectiveness of its primary education system.
- Jamaica, Chile, Uruguay, and Colombia have shown that repetition can be reduced significantly if national goals are set and a package of relevant programs are implemented. These countries illustrate what is possible. With the right policies and a strong integrated program of in-service teacher training and provision of educational materials, all LAC countries could easily achieve a 10% repetition rate in first grade by the year 2005.
- Compared to its GNP per capita, Brazil is a striking outlier in terms of the weaknesses of their primary school systems. In addition, both Brazil and Venezuela have enormous differences in terms of the educational attainment of higher income compared to lower income children. Bolivia has an unusual combination of high dropout and low student-teacher ratios.
- El Salvador, Guatemala, Haiti, and the Dominican Republic have the weakest primary education systems in the region, in terms of access, repetition and completion.

III

The Relationships between Primary School Inputs and Outputs in LAC

This section summarizes a review of the empirical studies in LAC which have systematically measured the relationship between school and other inputs and student achievement.

World-Wide Research

Broadly speaking, world-wide research has identified two elements which influence learning -- the characteristics of school children and the characteristics of schools.

Characteristics of School Children. In any population of children, some percentage (10-20%) will have a variety of problems which will make it difficult for them to learn. These problems can roughly be divided into: (a) learning disabilities, such as dyslexia and attention disorder deficit (ADD); (b) psychological problems and difficulties; and (c) low native ability leading to difficulty in learning. It has been found that many "learning disabilities" become less pervasive as children grow older. Some of these problems may be more prevalent in Latin America than in developed countries because they are often caused or exacerbated by inadequate nutrition, especially *in utero* and in the early years of life, by poor health and disease, and by difficult birth (e.g., oxygen deprivation). In a well developed education system, many of these students would receive special attention, or be put in a "special education" class, and allowed to proceed through the education system even though their learning did not keep up with the required norms. Because of lack of resources, this approach is rarely taken in schools in LAC.

Another type of problem is associated with poor nutrition. Children with inadequate protein and caloric intake will be hindered in their capacity to learn. Recent research is also beginning to identify certain micro-nutrients which may be very important for learning (Pollit, 1989).

A final problem brought by children is lack of readiness for learning or support for learning, and is most often associated with children from lower socio-economic groups, especially the urban slums and isolated rural areas. Usually these children have almost no

reading material at home. Their parents will have no more than a primary education and could well be illiterate. Their parents could well be speaking only an indigenous language rather than Spanish, Portuguese, English, or French. Both parents could be working ten or twelve hours a day, with older children caring for younger children; so there is very little time for parents to assist their children in their work even if the parents had the skills and motivation. Also, by age twelve, children can become economic assets and may well be working part-time. Furthermore, in spite of the recent growth in pre-schooling in Latin America, the vast majority of these children will have had no previous schooling or other formal socialization experience before they enter grade one.

Quality of Schooling. The schools have the job of transforming the raw material into a literate child. Lockheed and Verspoor (1991) summarized the world wide research on the relationships between school inputs and processes and learning. Textbooks and the availability of teaching materials appear to be very important physical inputs affecting learning. Lockheed and Verspoor also identified time on task (length of time devoted to learning), health and nutrition inputs, in-service teacher training, radio instruction, and some programmed learning materials as school level factors that influence learning.

LAC Specific Research

Overall, as many as 100 research reports have been identified which examine the determinants of school achievement⁹. However, only 18 reports written in the last twenty years specifically include production function equations, which provide a more objective basis for examining relationships than other statistical techniques or qualitative research.

Annex Table 1 lists all of the independent variables identified according to their classification. Below is a summary of the findings.

School and Classroom Characteristics. Confirming world-wide findings, an increase in class size does not have a negative effect on achievement (Min. Educ. Colombia, 1992). In fact, in a number of cases increased class size is associated with higher achievement (Harbison and Hanushek, 1992 and Min. Educ. Colombia, 1992). This finding may be a proxy for urban/rural location of schools. It should be noted that if teachers use audience-specific and differentiated teaching strategies rather than conventional approaches, then a lowered class-size might well have an effect on learning.

⁹ For an annotated bibliography of all types of research, qualitative and quantitative, which identified more than 100 reports on topics related to student academic achievement and repetition, see Schiefelbein, E., and M. Zeballos. "Factores del Rendimiento y Determinantes de la Repetición en Alumnos de la Educación Primaria, Resúmenes Analíticos Monotemáticos No. 5, Santiago, 1993.

There were no differences in achievement between public and private schools studied after controlling for socio-economic background (SES) (Velloso, 1977). This finding does not contradict the results of the TIMSS pilot study which did not control for SES. Urban schools (Arriagada, 1983), schools with full time schedules as opposed to school with shifts, and single-sex schools, tend to have better results (Min. Educ. Colombia, 1992). In schools with double shifts, students in the morning shift do better, perhaps since students from lower-income families work in the morning and attend school in the afternoon, as well as the tendency among morning teachers to send problem students to the afternoon shift (Palafox, et. al., 1992).

Educational Materials. As expected, there is a positive association between availability of educational materials and student achievement (Purves, 1973; Schiefelbein and Clavel, 1977). Access to other educational materials such as computer assisted instruction (CAI), blackboards, globes and maps, etc, has a mixed positive effect on achievement (Costa, 1977; Husen, et. al., 1978; and Jamison, et. al., 1981). Most of the infrastructure indicators, including not only building quality but also furniture, and access to electricity or water, have a positive effect on achievement; however, a considerable number of models found no relationship at all (Arriagada, 1983; Sanguinety, 1983; and Harbison and Hanushek, 1992). These infrastructure indicators may also be proxies for whether the school is located in an urban or rural area.

Teacher Characteristics. Teacher experience (Psacharopoulos, et. al., forthcoming (a)) and teacher schooling (Costa, 1977) are significantly associated with student achievement. Upgrading of teachers through in-service training does not seem to improve student academic achievement (Harbison and Hanushek, 1992). Recent research in Pakistan (Warwick, et. al., 1991) and Thailand (Raudenbush, et. al., 1992) confirm this finding. However, the research does not measure the quality or content of the training programs, only whether or not it was provided. In-service training, when properly done, could well have a significant effect on learning.

A teacher living close to the school does appear to improve student achievement (Min. Educ., 1992). Teacher subject knowledge, experience with material, and expectation of pupil performance are also associated with increasing student academic achievement (Purves, 1973; and Min. Educ., 1992). Salary incentives (in the range measured in the studies) do not appear to be important in improving student academic achievement (Morales and Pinell, 1977; and Harbison and Hanushek, 1992). Incentives are provided to teachers to stimulate their presence in schools with problems where quality is very low or which present a hardship such as in extremely rural areas. Perhaps they are too small to generate an effect or they should be implemented together with other policies like more time on task.

Pedagogical Practices. Available time and homework assignments are associated with higher achievement (Psacharopoulos, et. al., 1993). Teacher absenteeism is associated with low achievement (Avellar-Fleming, 1989). As expected the higher the number of hours, including instructional time, in the knowledge area tested, the higher the score on the test. Schools

applying multi-grade teaching and more active and audience-specific pedagogical techniques get better results than traditional rural schools (Psacharopoulos, et. al., 1993).

Management (including Principal Characteristics). In spite of a general consensus on the key role of principals, little research has been done on this topic in LAC countries. The available studies on principal's schooling and experience do not show a clear relationship with achievement. More research should be encouraged especially on school principal's leadership and motivation.

Student Experience. As found in other more developed countries, repetition is associated with low cognitive achievement (Costa, 1977). Distance to school is negatively associated with achievement. Participation in pre-school has a positive relation with achievement (Palafox, et. al., 1992). Favorable student attitudes and opinions toward teachers, school, and education, as well as self-esteem, in general, are associated with high achievement. However, the causal linkage is not clear (does higher achievement generates higher satisfaction or the other way around).

Health Status. Based on only a few studies, well-nourished and healthy children learn more (Gomes-Neto, et. al., 1992). Preliminary results of a recent analysis in Colombia shows that the provision of daily nutritional requirements improves early childhood development (ICBF-UNICEF, 1992). Unpublished preliminary longitudinal research in Guatemala found mild positive effects on mental and motor development from food supplement, and children were more likely to advance in grades (United Nations, 1990).

Conclusions

The main conclusion to be drawn from the review is that the literature in Latin America confirms world-wide findings. Education inputs contribute to the acquisition of cognitive achievement, independent of family background characteristics. This has been systematically found in the literature on third world countries since Heyneman and Lozley's (1983) comparative study. The availability of textbooks continues to be highly correlated with achievement. However, research is not available on the actual use of textbooks in the classroom. The provision of basic infrastructure (e.g. electricity, water, furniture) as well as the proximity of schools to students, are positively associated with achievement. LAC research confirms the importance of pre-schooling on primary school achievement. The research also confirms the complexity of the relationships of teachers, teacher classroom behavior, and student learning achievement. The positive relationships include: more personalized and flexible teaching methods, pre-service training, teacher experience, teacher subject matter knowledge, teacher proximity to school, teacher attendance, time on task, homework, parental involvement, and curriculum coverage. Class size is not positively related to achievement. Key student

characteristics affecting achievement include their health and nutrition status, their attitudes towards schooling, and their pre-school experiences.

The review of literature also identified possible new directions for research. First, since cross-sectional analysis does not allow a study of changes in student knowledge, longitudinal panel analysis would be a better approach for future research. Unfortunately, panel analysis is only exceptionally used in the studies reviewed for LAC. Secondly, self-selection bias is rarely controlled for in the models. To establish causal relationships it is necessary to use quasi-experimental designs, and this is rarely done. The measurement of cognitive achievement is a complex task, and many times not enough consideration is given to test construction. Future research should emphasize longitudinal analysis, experimental research, and analysis of the testing methods used.

Thirdly, although 35 models included expenditure per student as an independent variable in the production-function¹⁰, only one study (Harbison and Hanushek) included cost-effectiveness analysis. As a result, little can be said about cost-effectiveness of education inputs in the region. This together with the methodological limitations, only allows us to identify promising efficient inputs, but not necessarily those inputs which are cost-effective. Future research should focus on measuring cost-effectiveness.

Fourthly, although the number of characteristics measured has increased substantially, variables on input-process and school organization are few. Most of the variables operationalize the quantitative aspects of the inputs rather than their qualitative aspects or processes. We can therefore say little on how access to textbooks affects achievement or why teachers with more formal schooling improve student achievement. Future studies will therefore need to include characteristics such as teacher and principal leadership and attitudes such as self-esteem, and powerlessness; staff stability; curriculum articulation and organization; parental involvement in school activities, and attitude toward schooling; nature of in-service teacher training; and, other characteristics like health and nutrition and health interventions. Careful experimentation of well-designed innovative models and systematic evaluation of results are also necessary for endorsing specific policies. For example, self-learning textbooks may improve performance for students from lower socioeconomic background, but may do little for students from higher socioeconomic background.

A final comment refers to the little quantitative research that has been conducted by teams indigenous to LAC. Most literature was produced by researchers outside of the Region. In order to make rational educational decisions countries should carry out systematic research. Unfortunately most countries in the Region do not have the institutional capacity or the

¹⁰ Out of the 35 models, only 6 show a positive relationship with achievement. This seems to reflect that more important than the amount is the way the resources are spent.

willingness to allocate the funds required for educational policy research. Good research groups in LAC, with well-defined objectives, still have to struggle to maintain a good level of performance in the region. They lack human resources, financial support, and institutional capacity. International agencies and local Governments will need to provide long-term support to the research groups if LAC countries expect to advance their knowledge of what works in the region.

IV

Early Childhood Development ¹¹

A. Issues and Trends

This section explores issues and trends in the early childhood development programs in LAC. According to UNESCO all education programs preceding the primary level, such as kindergarten, nursery school and infant classes (UNESCO, 1992), are defined as pre-schooling, and most of the standard statistics refer to this definition. Non-formal pre-schools and home day care programs, although they often contain a strong educational component, are typically not included in standard educational statistics. Both types of programs should be considered as "early childhood development" programs. Early child care programs, which are usually considered separately from child development program, are in fact similar in concept. Early child care generally has a strong custodial function; but all such programs should include a stimulation and education component.

The following topics are covered: the reasons for public investment in early childhood development; trends in enrollments; costs of alternative models of pre-schooling; and equity in the provision of pre-schooling programs.

Why Invest in Pre-Schooling and Early Childhood Development

The justifications for investing in early childhood development are both scientific and economic.

Scientific Evidence. The early years of life are critical in the formation of intelligence, personality, and social behavior, and the effects of early neglect can be cumulative. The evidence from physiology, nutrition, psychology, education and other fields includes the following:

- Brain cells are formed during the first two years. Stimulation of a child's senses affects the structure and organization of neural pathways in the brain during the formative

¹¹ This section is largely based on a background report prepared by Robert Myers.

period. By age 6, most of these connections are made (or not, as the case may be). Thus, providing opportunities for complex perceptual and motor experiences at an early age favorably affects various learning abilities in later life and can even compensate, at least partly, for deficits associated with early malnutrition (Dobbing, 1987).

- Children whose care-givers interact with them in consistent, caring ways will be better nourished and less apt to be sick than children not so attended. In later life these children will have greater ability to love and to establish permanent relationships (Zeitlin, et. al., 1990).
- Longitudinal studies demonstrate long-term effects with a variety of intervention programs. These effects go beyond the learning of basic abilities to include: improved school attendance and performance, reduced repetition, increased employment and reduced delinquency during the teenage years and reduced teenage pregnancy. However, many of the effects of pre-schooling, especially on school performance can be lost if primary schools are of inadequate quality (Berutta-Clement, et.al., 1984 and Myers, 1990).

Economic Evidence. Improving a young child's health and nutrition, and providing opportunities for stimulating interaction and early education can bring a high economic return to society as well as to the individual. Economic returns take several forms:

- *Increased productivity of participating children.* In the long chain of causation that links early childhood development to later productivity, early ability affects later ability, educational attainment, and occupational placement and experience -- all of which influence adult productivity. A growing body of empirical evidence suggests that early childhood programs have the potential to affect early ability by improving both physical and mental capacity (McGuire and Austin, 1987). They can also have an affect on enrollment, progress and performance of children in school (Myers, 1992) and, in turn, bring important changes in skills and outlooks affecting adult behavior (e.g., Inkeles and Smith, 1974). Schooling helps build skills such as the ability to organize knowledge into meaningful categories, to transfer knowledge from one situation to another, and to be more selective in the use of information (Rogoff, 1980; Triandis, 1980). Schooling facilitates greater technological adaptiveness (Grawe, 1979). It relates to both increased productivity by farmers (Lockheed, et. al., 1980) and by workers in the informal sectors (Colclough, 1980).
- *Cost savings.* Preventive programs produce savings by, for instance, improving the efficiency of educational systems through reductions in dropout, repetition and remedial programs. Similarly, a program result may be to lower health costs through early diagnosis and by developing better health habits. Or, other social program costs may be reduced such as welfare payments or judicial and penal costs (Weikart, 1992).

- *Increased productivity of care-givers.* Child care and development programs can free up the time of care-givers for productive purposes. They offer the possibility of increased labor force participation by women and they can free older siblings to learn and earn as well.
- *Reduced Inequalities.* Investment in early development can help to reduce economic and social inequities. Children living in conditions of poverty and/or discrimination often fall behind their more fortunate peers in some aspects of their development at an early age. This reinforces existing differences. In the short run, investments in programs of early childhood care and development can reduce (but seldom eliminate) the growing gaps in development, and therefore can reduce the differential consequences. Indeed, there is increasing evidence that children from more disadvantaged backgrounds can profit more from good early childhood programs than more advantaged children (Myers, 1992).

Enrollment Growth and Equity

The only available region-wide data on enrollment in early childhood development programs are based on the UNESCO/OREALC definition of formal pre-schooling. As shown in Table 4.1, the proportion of 3-5 year olds enrolled in pre-school programs has increased from 1980 to 1989 from 18% to 24%.

Overall in 1980, 4,867,500 million children (17% of cohort) were enrolled in pre-schooling. In 1989, 8,910,900 children (28% of cohort) were enrolled for a region wide increase in absolute numbers of 83%. This was by far the most rapid increase of any educational level in the 1980's although it also reflects that the base from which it started was much lower. Seventeen of the nineteen countries surveyed (Uruguay and Bolivia were the exceptions) increased the percentage of pre-school children enrolled. The significance of this phenomena is striking not only because it has involved so many children but because it happened in a time of economic crisis and because it is likely to further increase in the coming decade.

The countries with the highest enrollment ratios in pre-schooling are Jamaica, Mexico, Argentina, Venezuela, and Chile. With the exception of Jamaica, these tend to be the middle income countries in LAC. Over the nine year period Mexico raised participation rates from 17% to 40%, which, after Jamaica, is the highest in the region. This was a result of a specific central government policy begun in 1978 aimed at widening the provision of pre-school services. Brazil, the Dominican Republic, Argentina, and Costa Rica also had major increases in the percentage enrolled in pre-schooling. The increase in Brazil reportedly occurred mainly in urban and higher income areas. The Dominican Republic has achieved a major increase in pre-schooling (from 5-18%), mainly through supporting increased Non-governmental Organization (NGO) provision of services. The countries which are lagging most in pre-schooling are the poorest countries in LAC, with the lowest primary school enrollment ratios--Guatemala, Haiti, Paraguay, Ecuador, El Salvador and Honduras. Colombia has a relatively low enrollment rate, but this may be explained by the fact that it has a large number of informal programs which do not appear in UNESCO statistics.

Table 4.1: Pre-School Enrollment and Private and Rural Share (in percent)

Country	Gross Enrollment Rate (a)			Percent Private Enrollment			Rural Enrollment as Percent of Total
	1980	1989	Change	1980	1989	% Change	1989
Argentina	28	39	11	32	31	-1	...
Bolivia	17	16	-1	14	12	-2	32
Brazil	14	27	13	46	37	-9	5
Chile	24	32	8	20	40	20	6
Colombia	10	14	4	64	52	-12	9
Costa Rica	12	22	10	13	23	10	31
Dominican Rep.	5	18	13	87	78	-9	...
Ecuador	6	12	6	42	37	-5	21
El Salvador	10	14	4	20	33	13	12
Guatemala	7	9	3	38	44	6	6
Haiti	2	7	5	...	72	...	...
Honduras	10	11	2	16	18	2	19
Jamaica	72	81	9	85	86	1	...
Mexico	17	40	23	11	7	-4	32
Peru	25	29	4	27	22	-5	14
Panama	11	19	7	34	21	-13	28
Paraguay	5	8	3	63	55	-8	14
Uruguay	26	23	-3	25	44	19	1
Venezuela	32	37	5	17	17	0	15
Weighted Average	17	28	11	36	38	2	15

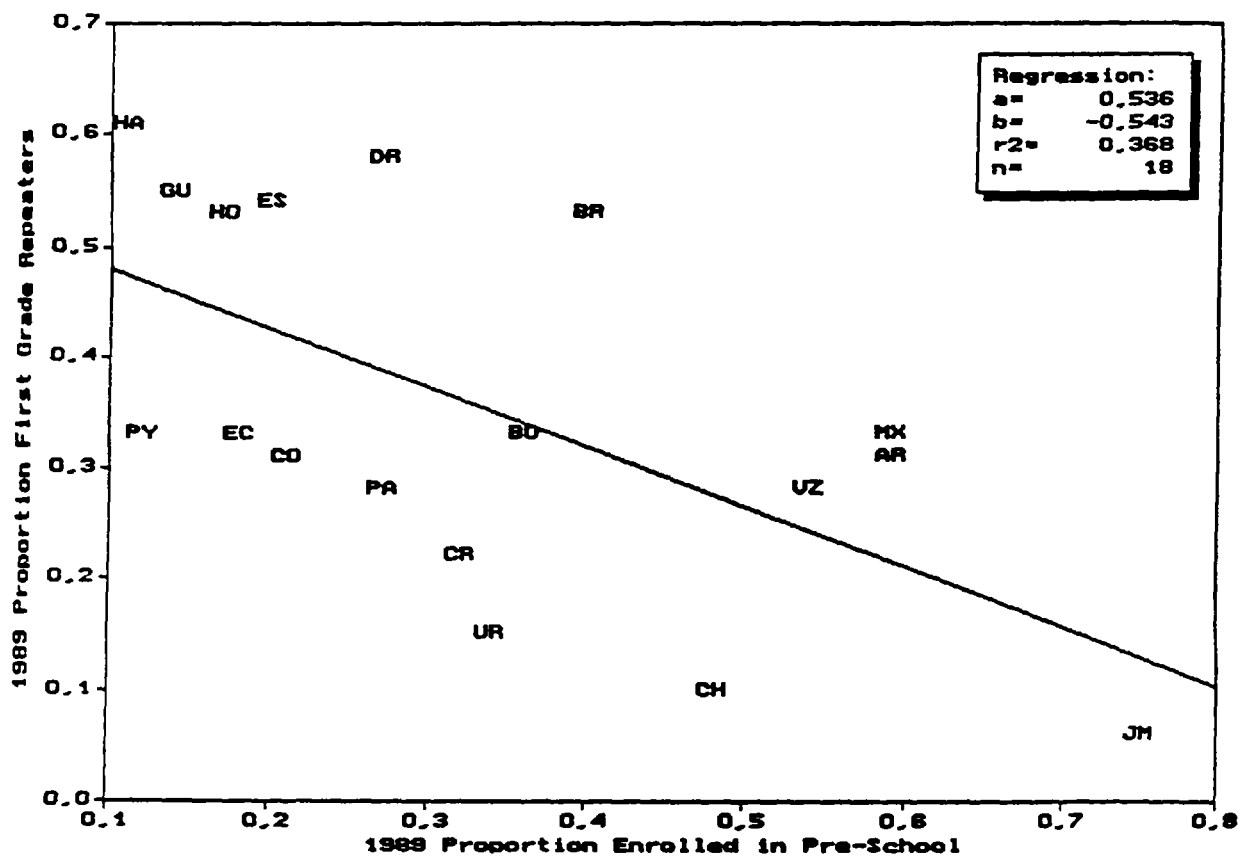
(a) Enrollment as a percentage of children aged 3-5.

Source: UNESCO-OREALC data.

Over one-third of all pre-schooling enrollments are private, compared with 15% of primary school enrollment which is private. The percentage of private school enrollment has been stable over the past decade. The percentage of private enrollments ranges from over 50% in Colombia, Paraguay, Haiti, Jamaica, and the Dominican Republic, to less than 20% in Bolivia, Venezuela, Honduras, Mexico, and Nicaragua. In many cases private provision of pre-schooling is different than private financing of pre-schooling, since the state may support private institutions. This especially occurs in Colombia, Jamaica, Brazil and the Dominican Republic. Student teacher ratios are generally lower in private institutions compared to public institutions.

Figure 4.1 provides a graphical representation of the relationship between pre-schooling and first grade repetition among eighteen LAC countries. It shows a strong relationship ($r^2=.368$) between these two measures, lending some support to the hypothesis that pre-schooling leads to reduced repetition. It is noteworthy that Jamaica has the highest proportion of pre-schooling and the lowest repetition rate. This figure should be interpreted with caution because of the small number of observations and possibilities of co-linearity.

Figure 4.1: LAC: First Grade Repetition and Pre-School Enrollment Ratios



Source: UNESCO/OREALC data.

There are several reasons for increases in early childhood programs. Female labor force participation has increased over the past several decades, from an average of 23% in 1980 to 31% in 1989 (Psacharopoulos and Tzannatos, 1991). Changes in family characteristics during the last twenty years have added extra burdens to women as demonstrated by the high percentage

of households which are headed by women. Of the eleven countries for which information is available (Argentina, Brazil, Chile, Costa Rica, El Salvador, Honduras, Jamaica, Peru, Panama, Uruguay and Venezuela) an average of 22% of households are headed by women. In addition the help that families need with child care is not as nearby as it once was. Extended families are much less common. As migration and progressive urbanization occur, members of an extended family -- grandmothers, for instance -- may remain in rural areas or themselves be at work outside the home. These changes affect both the possibility of direct care and the socialization of new mothers that grandmothers have given in the past. Nor are there as many sibling care-givers as there once were; families are smaller and the idea that schooling is a child's work is increasingly accepted. Finally, individuals and governments are increasingly recognizing the significance of the economic and scientific evidence of the importance of early childhood development.

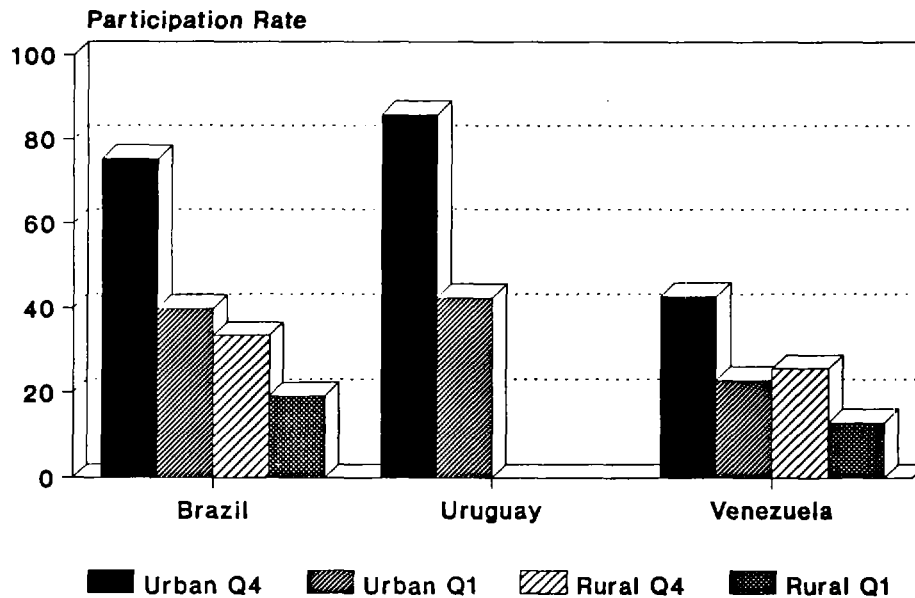
Region wide data is not available on pre-schooling by income group and by urban rural groups. However, Figure 4.2 summarizes the situation in Brazil, Uruguay, and Venezuela (CEPAL, 1992(b)). For these three countries, enrollment in the highest quartile of the population in pre-schooling is about twice as great as enrollment in the lowest quartile, and enrollment in urban areas is about twice as high as enrollment in rural areas. The greatest inequities are, therefore, between the urban rich and the rural poor (See also Annex Table 5).

More than likely, most other LAC countries have similar ratios. The exceptions may be Mexico, Jamaica, and Dominican Republic, where large scale government supported programs have been implemented.

Costs and Cost-Effectiveness of Pre-Schooling

Using standard statistics from UNESCO/OREALC and from censuses, it is possible to estimate the unit costs of "conventional" pre-schooling in LAC (e.g., formal programs directed at 3-5 year olds). Based on recent census sample surveys, pre-school teachers in five countries earn on average 82% of primary school teachers' salaries. On the other hand, the student/teacher ratio in pre-schooling is 25:1, significantly lower than the 29:1 ratio in primary education. This ratio has decreased significantly from 34:1 in 1980. The lower student teacher ratio in pre-schooling is similar to that in USA and Europe, and is justified by a belief in a need for closer attention to very young children.

**Figure 4.2: Pre-School Participation Rate of Age-Group
3-5 Years Old by Income Quartile, Circa 1989**



Source: CEPAL, Household Surveys.

Note: Q4=Highest quartile of household income.

Q1=Lowest quartile of household income.

For Uruguay, information is only available for the city of Montevideo

As can be seen in Annex Table 6, the unit costs of formal pre-schooling, not including food or health services, are slightly below the unit costs of primary schools, a result of lower pre-school teacher salaries combined with lower pre-schooling student teacher ratios. Adding the cost of food or health services would increase costs significantly.

There is little information on differential costs between public and private providers of formal pre-schooling. A study in the state of Sao Paulo in Brazil found no major recurrent cost differences in overall costs, but private institutions generally had lower student teacher ratios and lower teacher salaries (Paul, 1988). The major cost difference could be found on the capital side. Private programs were undertaken in minimum available spaces, while public programs were located in buildings which were equivalent to regular primary schools. If such costs were prorated over time then the difference between public and private systems would be on the order of 20%.

"Non-formal" programs managed by mothers with training and supervision are significantly lower in cost. The unit costs of the PROAPE program in Brazil are estimated at one fifth of the costs of a formal program. The Colombia "hogares comunitarios" program, described in detail in the following section, is reported to have a cost per child of US\$156 per year, of which two thirds is the cost of food. In a study of the Peruvian PRONOEI, the per child per year cost (covered by governmental and international resources) in the state of Puno was about US\$28.

Cost and cost effectiveness issues are of particular importance in pre-primary education because of the region wide expansion of pre-schooling. In terms of effectiveness, one educational objective of pre-schooling is to reduce repetition in primary school. In principle if a year of pre-schooling could enable children to complete their primary school program more rapidly (without repetition), then it would pay for itself if the average number of years of primary schooling to reach a given level were reduced by one year. In one case in LAC, the PROAPE project in Brazil, the reduction in school repetition associated with participation in the project was costed. It was found that "the average cost per child of producing a first grade graduate is at least US\$41 less for PROAPE children than for children without pre-schooling. This per child savings is higher than the PROAPE cost of US\$28. In these terms, the PROAPE program not only paid for itself but resulted in a primary school cost saving in the first year over and above the cost of PROAPE." (Calculations presented in Myers, 1992, based on Ministerio da Saude, 1983). The most comprehensive study of this sort has been done in the USA for the High Scope Program. The analysis showed that a high quality pre-schooling program more than paid for itself through reductions in the costs to society of juvenile delinquency and unemployment of young adults (Weikart, 1992).

Since in most cases free pre-schooling is not seen as a "right", and since there are significant private benefits to pre-schooling, which frees up mothers to work, Governments have an opportunity to ask parents to pay for a portion of costs. However, systematic information on cost recovery in pre-schooling is not currently available.

Conclusions

The conclusions of this review of the provision of early childhood development are the following:

- Scientific and economic evidence supports public and private investments in early childhood development.
- There was a large increase in pre-school enrollment during the 1980's despite the economic crisis: this was a result of increased female labor force participation, changes in family characteristics, and increased awareness by parents of the importance of the programs for children's development.

- The costs of formal pre-schooling are similar to costs of primary education and would be higher if food and health services are included. Private pre-schooling may be less expensive than public provision. Non-formal programs utilizing mothers, professional supervisors, and private homes are much less costly than formal programs. With good supervision these programs can be of adequate quality.
- Urban dwellers and higher income groups have much greater access to pre-schooling than poorer and rural populations.

B. Strategies for Reform

This section begins with a summary of the key organizational and programming strategies for pre-schooling and ends with recommendations with regard to seeking the most cost-effective use of funds in the provision of pre-school programs.

Organizational and Programming Strategies

Integrated Program Models. A large variety of models of early childhood care and pre-schooling should be supported, with the exception that "force feeding literacy" to pre-schoolers does not seem to work. There should be a focus in all models on quality, especially in training of care givers and of pre-school teachers, but quality is not synonymous with high cost, in fact. Governments should avoid programs which essentially replicate primary schools, and may be of high cost, but low quality. It would be appropriate to build on models which have already had demonstrated success. One particularly successful program is the Colombian "hogares comunitarios" described below.

Parental education programs can help parents develop skills that will improve their ability to interact with the child and lead to more general improvements in the environment in which a child grows and develops (Bernard van Leer Foundation, 1986; Myers, 1992). Emphasis can be placed on bringing parents (and other care-givers) together so that they enrich their understanding and so that they provide support to one another. Programs of this sort can be undertaken in conjunction with center-based programs or as a separate activity. The Mexican Parent Education Program, is an example of such a program.

Integrating Child Development into Education, Health, Nutrition and Multi-Sectoral Programs. In primary schools, primary school children (who will all too soon be parents) can be provided, through the curriculum, with information about health, nutrition, and psycho-social development of young children which they apply in working with (playing with) younger, pre-

Box 4.1: Colombian Program – Homes For Well-Being

One very successful center based program is the Colombian program of "Homes for Well-Being"—a community-based, non-formal program providing attention to children ages one to seven by community day care mothers in groups of up to 15 children. Since its inception in 1986, the program has expanded to cover (1991) approximately 800,000 children. Care is usually for 8 hours per day in the home of the day care mother and consists of providing children with the conditions necessary to foster their health and their physical, psychological and social development. Each community day care mother receives training in the care and development of children as well as in family and community relationships and in nutrition and health. She is assisted, on a rotating basis, by women whose children are cared for in her home. Nutritional supplementation is provided for the children. Day care mothers are provided with small loans to be used in upgrading their homes. Community members participate in an initial analysis of the communities needs for services, determine the number of day care homes to be set up and select local women to become home day care mothers. Local management teams are established which are responsible for purchases and payments to the community mothers. Some children are given "scholarships" which are used to pay the home day care mother. A major share of the funding, as well as coordination of the program falls to the Colombian Institute of Family Welfare (ICBF), with additional responsibilities shared with the Ministry of Public Health, the National Apprenticeship Service, the Institute of Territorial Credit, and other governmental and private organizations. While meeting directly the care and development needs of the children, the program seeks also to improve the economic base of a community by providing paid employment to neighborhood care givers, by freeing other women to seek (or upgrade their) employment, and by directing funds to local business for economic activities related to home day care.

school aged children. In literacy and adult education programs, topics can focus on the development of very young children. In teacher training, an early education component could be included to improve the professional capacity of early educators and to provide them with an orientation to non-formal as well as formal programs. The gaining market for early childhood care and development (including home day care centers formed as part of a large public program or as a private initiative) suggests a program of technical training for future care givers.

With the increasing attention being given to growth and psycho-social development, child development themes can be incorporated into on-going health and nutrition programs. Maternal and Child Health Care (MCH) programs often do, but always should include attention to the psycho-social well-being of mothers and children, especially during pregnancy and lactation, when women not only need medical supervision and advice, but also need strong social and psychological support.

Emphasizing Training and Communication Strategies. Training is crucial to reorient many individuals and institutions to a broader, more integrated view, as well as to provide project implementors with higher level skills. The mass media can play a role in programs of

Box 4.2: The Mexican Program

The Mexican program is a successful model which could be replicated elsewhere. In 1982, a national program of non-formal education of parents and community members was launched by the Secretary of Public Education (SEP). It focuses on low-income families with children ages 0 to 4 residing in poor rural and urban marginal communities. The objective of the program is to educate and "empower" parents to improve their care of, and interaction with, their children. On the average, the program has reached about 200,000 children each year through their parents.

The Mexican program rests upon a system of successive training in which professionals contracted by the SEP work together with state personnel to train supervisors who in turn train up to ten module supervisors, who then train and supervise up to 10 local promoters, or "community educators." The community educator works with groups of 20 parents, organizing a group orientation at the outset and 40 group meetings during the year during which parents discuss ideas presented in a "Parents Guide." Group meetings are backed by periodic home visits. Community educators are "volunteers" who live in the community and who rely on the community for organization and support and who are given a gratuity for their service.

many kinds, including those directed toward improving early childhood development. Communications strategies will be part of the general process of creating awareness in the public at large and among those concerned with the program, and as part of the specific process of educating parents and other care-givers.

Collaborative Arrangements Among Governments, Non-Governmental Organizations (NGOs) and Communities. In most places, governments will have great difficulty reaching all parts of the country and all groups with projects or programs of child care and development. Moreover, programs that are run by governments (even at state or district levels) tend to be costly, top-down, top-heavy programs with relatively little flexibility to adjust to local situations and with little ability to foster participation and management within local communities. In the long run local communities must take on a coordinating and sustaining role. NGOs often (but not always) have a greater ability than governments to assist in developing organizational structures and processes that will allow a project to be sustained after special inputs provided at an early stage to get the project going are ended.

Assessments, Evaluation and Research. Most present diagnoses of the situation of children focus on a particular age (e.g., children age 5), with a particular approach in mind (e.g., center-based pre-schools) and from the viewpoint of a particular sector (e.g., education). A more comprehensive assessment should therefore be: looking across the age span from conception to about age 7 or 8; cutting across sector divisions; and considering a range of complementary approaches to child development, including center-, home- and community-based approaches. The diagnosis would need to draw not only from health and education and nutrition studies, but should also include a review of anthropological studies and participation of different cultural groups in the assessment.

Many of the evaluations of early childhood development programs focus on pilot or demonstration programs in which the conditions for success are relatively good. These help to make the argument that positive results are possible, but we need a much greater knowledge base to answer questions about who benefits most from what types of programs under what conditions and at what cost, particularly as programs "go to scale." Longitudinal studies are needed to corroborate or modify conclusions flowing presently from longitudinal studies in the United States and Europe. To serve their purpose, they should be carried beyond the normal 5-year life of a project. This may require special arrangements including outside funding, and creation of suitable instruments and measures of a child's developmental status that are appropriate to the particular countries in which they are to be used.

Cross-Sectoral Organizational Strategies. The need to work in a multi-sectoral manner when dealing with early childhood care, development and learning needs to be confronted and organizational devices created to facilitate the needed collaboration. At a minimum, an organizational mechanism needs to be created to provide information across sectoral lines as projects are being developed within any one sector. Particular attention needs to be given to coordination between nutrition and education programs.

Organizational and Programming Cautions. "Integration" may be difficult. To achieve it, it may be necessary to focus programs on the same population, even though delivery systems are not formally integrated, leaving the task of integration to community and participants. Integration of the content of programs (e.g., putting a mental and social development component into the content of a health service) may be easier than trying to get people from different programs to work together. While it is important to attend to quality, it may be counter-productive to insist on standards that are so high that they undercut worthwhile initiatives that do not meet the high standards. For example, setting high certification standards for preschool teachers may prevent many talented and capable individuals from working with young children in less formal early childhood programs.

A long term viewpoint is critical. Programs are often slow to develop: the tendency to fund them for short periods and then to move on quickly to another is a formula for failure. A longer term view allows setting of very concrete expectations in the short run, leaving some of

the expected results to be accomplished over time. This more realistic view helps to moderate "failures" which are but which are the result of not measuring up to unrealistically high expectations set in the short run.

Cost and Financing Strategies

While pre-schooling is increasingly seen as fundamental to the development process, hard pressed Governments will need to seek to minimize public costs while at the same time ensuring that social goals are met. The three key necessary policies are: to seek the lowest cost programs consistent with quality, to target public funds to at risk populations, and to seek a maximum of cost recovery consistent with goals of access.

Least Cost Solutions. The payoff for early childhood development programs can be very great, but generally occurs in the long run, in terms of not only reduced primary school repetition but also reduced dropout, longer stays in school, increased income, and a reduction in crime and other anti-social behavior. As an investment the long term returns are as high or higher than any other investment in human or physical resources. Cost is therefore less important than cost-effectiveness. Nonetheless, hard pressed governments will need to seek least cost solutions.

Formal pre-schooling is nearly as expensive as primary education and with feeding could well be two or three times the cost per student. Publicly provided pre-schooling may well be, on average, 20% higher than similar programs provided by the private sector. Furthermore, private sector provision of these services may be of higher quality as well as more agile than public provision. Therefore exclusive public sector provision of such services should be kept to a minimum, and, whenever possible, public funding should go to a variety of private NGO groups as providers of services in partnership with government and communities. In terms of physical space, as first grade enrollment decreases (as a result of reductions in the number of repeaters and lower population growth), some first grade seats can be freed to receive pre-schoolers. However, putting pre-schooling into primary schools runs the risk that the approaches will be inappropriate to pre-schoolers' needs.

Informal programs such as the "hogares comunitarios" in Colombia have much lower salary and investment costs than formal programs. Non-formal education based on mass media, the distribution of printed materials and group sessions animated by a local contact may cost one third or one fifth of the unit cost in primary education. Initial education through parents, as in the Mexico program, is another low cost approach.

Mass media advertisement campaigns (in terms of radio and TV spot campaigns to "sell" the need to sing songs, tell tales and ask questions to children) also have very low costs (around US\$ 0.01 or less per student). Sesame Street type programs, while very costly on a per-program basis to produce, can have very low costs per viewer when developed in large countries

such as Brazil and Mexico. TV programs of this sort can be partly underwritten by firms which could further reduce the cost to government. Because of the low unit costs, the payoff would be great even if repetition were reduced by a very small percentage.

Targeting. Public support of pre-schooling should be directed to lower income and at-risk children, especially those at risk for dropout or for delinquency. The middle and upper class should cover all of the costs of pre-schooling for their children. The bulk of government funds should be directed at the lowest 25% of the population.

Cost Recovery. Since one of the goals of pre-schooling is to make it easier for mothers to work and, therefore, increase their income, even programs directed at the poorest segments of society should have elements of cost-recovery and of cooperative work-sharing. Even in these poorest communities it should be possible to recover 25% of the costs of early childhood development programs through direct payment or in-kind provision of services.

Conclusions

- Organizational and program strategies should include: encouraging a variety of programs and models; integrating content of programs; including child development themes in education, health and nutrition programs; improving training and communication; supporting collaboration among government and private groups; and assessing and evaluating programs.
- Governments should seek least-cost solutions which emphasize targeting, cost-recovery and, government, community, and NGO partnerships in the provision of services.
- LAC countries should build on the successful experiences of cost effective programs, two of which are the Colombian "hogares comunitarios" program and the Mexico home-based parent training program.

Textbooks and Teaching Materials ¹²

This chapter reviews the key issues and trends in the provision of textbooks and teaching materials in LAC; and proposes a set of strategies for improving textbook provision. It is based on case studies of textbook provision in Mexico, Costa Rica, Venezuela, and Brazil, as well as on information made available on textbook provision in seven Andean countries (Bolivia, Colombia, Chile, Ecuador, Panama, Peru, and Venezuela), under the "SECAB" program.¹³

At the outset it should be emphasized that the availability of textbooks and other educational materials is one of the fundamental factors for educational quality and academic achievement at the primary level. For example, in Nicaragua, those students who received mathematics textbooks scored significantly higher on standardized achievement tests than students who received no learning materials (by about one-third of a standard deviation) (Jamison, et.al., 1981). In the Philippines, students in classes with textbook ratios not greater than 2:1 scored about one-third of a standard deviation higher on tests of science, mathematics and Filipino than students in classes with textbook ratios of 10:1 (Heyneman, et.al., 1984). From a learning perspective, it is clear educational materials are important.

Equally important, from an economic perspective educational materials are highly cost-effective. Perhaps the most conclusive evidence to date of the value of textbooks and educational materials (often referred to as "educational software") comes from the recently published study of primary education in Northeast Brazil (Harbison and Hanushek, 1992). In this study, conducted over a five-year period, software expenditures consistently produced the largest achievement gains and demonstrated the greatest cost-effectiveness (compared to expenditures on educational facilities, teacher salaries and teacher training). In fact, for every dollar invested in textbooks and other educational materials, the primary education system saved

¹² This section is based on a background report prepared by Samuel Carlson.

¹³ SECAB stands for the Secretaria Ejecutiva del Convenio Andres Bello, a regional organization promoting educational, scientific and cultural integration of the seven countries named above, plus Spain. This study was conducted between 1990-91 and covered more than 1,500 hundred schools, 4,500 teachers and 150,000 students.

on average four dollars from reduced dropout and increased student flow efficiency.¹⁴ This provides a clear message to policy makers: the number one priority at the primary level should be a reliable supply of quality educational materials (textbooks, workguides, workbooks, pencils, notebooks, chalk, library books, etc.).

A. Issues and Trends

Availability of Textbooks and Teaching Materials

In Mexico, textbooks are available to about 75% of children as a result of the national textbook program which has consistently provided textbooks to children even in periods of economic difficulty. Notebooks and pencils are purchased by parents. Library books are lacking. In Costa Rica textbook availability was estimated in 1991 at 45% on average nationwide, although in rural areas it was about 15%.¹⁵ Many of these materials were the remainder of the National Schoolbooks Program, which functioned with assistance from USAID from 1983-1987. A recent survey of the country's 3,250 primary schools identified shortages of 8,800 junior mathematics sets, 2,540 maps, and even such rudimentary items as blackboards (450) and rulers (600). Two-thirds of primary schools (2,120) lacked any kind of library and many were lacking even basic educational materials (e.g. paper).

In Venezuela the Ministry of Education (MOE) provided just 70,000 textbooks to approximately 3.8 million students, or less than 2% of all basic education students in 1989 (Venezuela, 1992). This is in stark contrast to 1979, a year in which the MOE provided over 3.7 million textbooks and 7.8 million notebooks to approximately 3.2 million basic education students, totaling more than 100% coverage (Venezuela, 1984). Visits by World Bank staff to poor urban areas and rural schools revealed that many students had no textbooks. In wealthier urban schools textbook supply was around 50%, since families were purchasing them. Schools visited by World Bank staff possessed very little beyond the few sheets of paper the teachers bought themselves and the notebooks the students owned. There were no dictionaries, workbooks, library books, posters, maps--in short, nothing except a blackboard and worn furniture.

¹⁴ It should be noted that reducing repetition lowers the cost per graduate but does not lower total primary education costs, since the children who would be repeating the first grade and subsequently dropping out instead remain in school through sixth grade.

¹⁵ As in the case of Mexico, these estimates are based on numerous World Bank observation missions to Costa Rica and extensive interviews with education authorities, not on a comprehensive quantitative survey. As such, these estimates are indicative, not definitive, but reflect the consensus of teachers, MOE administrators and World Bank staff working in that country.

In Brazil, textbook availability is estimated at about 33%, on average, between 1986 and 1992. Approximately 230 million books were provided through the National Textbook Program, compared to an estimated minimum need for about 700 million texts. These textbooks were provided by the federal government through its National Textbook Program (NTP). Between 1990 and 1992 about 79 million books were provided, compared to a requirement of 300 million books. Teachers' guides were made available with the textbooks.

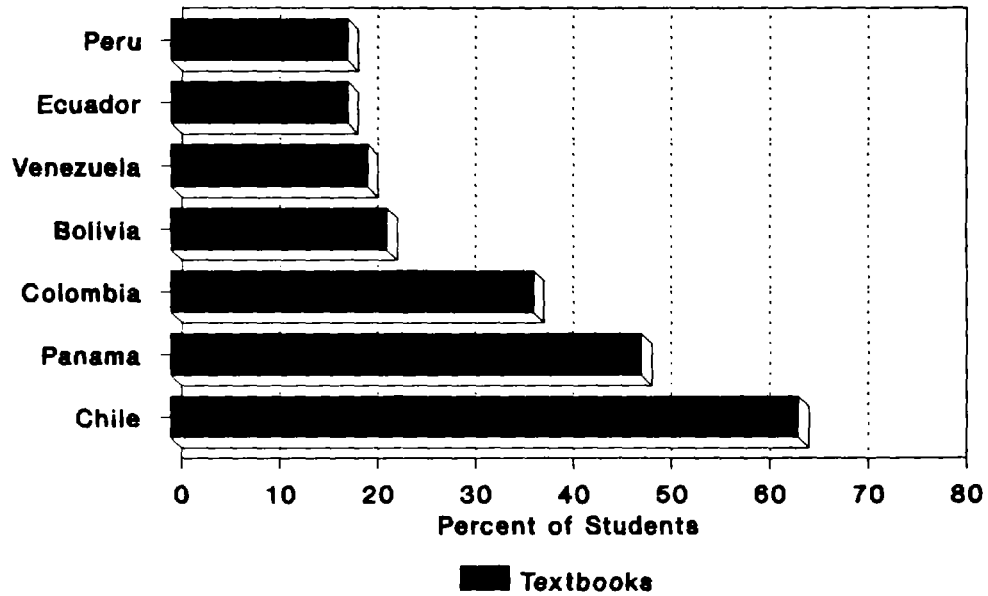
In the SECAB countries (Chile, Colombia, Bolivia, Ecuador, Panama, Peru and Venezuela), textbook supply averages only 32%. Approximately 70% (weighted average) of students in grades 1-5 possessed a Spanish language textbook in 1991, although just 30% had math textbooks and less than 10% had science and social studies texts. Figure 5.1 and Annex Tables 7-8 summarize availability of textbooks and teaching materials in these countries. Chile does best, at 64%, while Ecuador, Peru, and Venezuela, provide 20% or less of the required textbooks.

Textbooks are less available in SECAB classrooms than other types of educational materials. Approximately 95% of all primary students had notebooks in 1991, while about 35% of classrooms had dictionaries and atlases, and more than 70% had at least some auxiliary materials.

While systematic information is lacking, textbooks and other educational materials are more available in urban areas than in rural zones, in wealthier communities than in poorer locales, and in private, as opposed to public, schools. Poor, rural public schools present the greatest challenge for educational materials supply, and where the public sector has the greatest role to play for equity reasons. The private sector cannot be expected to play a major role in rural areas since distribution costs are higher, while the purchasing power of rural families and the concentration of the potential private market are lower. The lack of educational materials in rural areas is exacerbated by the fact that other types of media and printed material are scarce, so that many rural school children have virtually no reading or writing materials whatsoever.

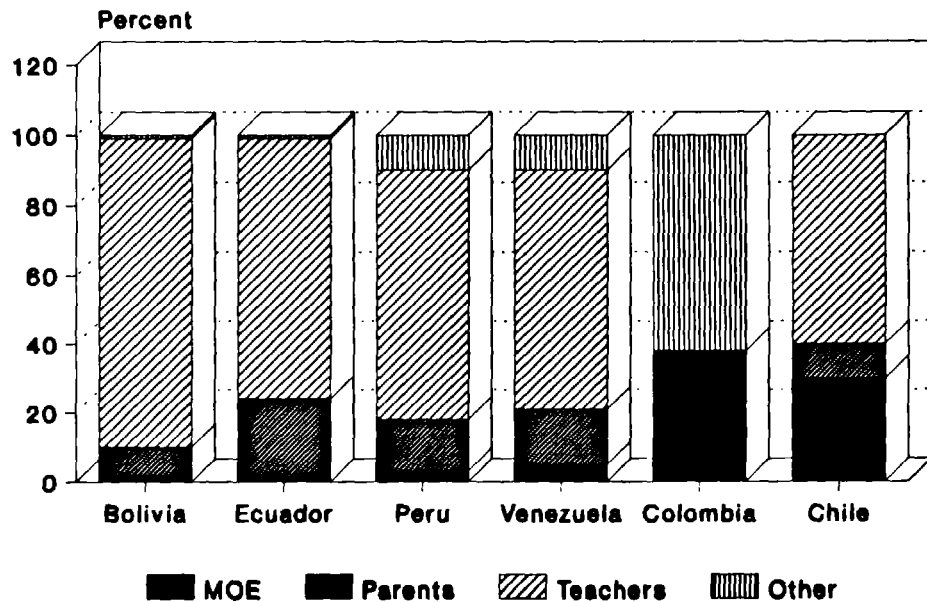
In short, with the exceptions of Mexico and Chile, in all the countries surveyed, only 50% of needed textbooks are available to students. In addition in the countries surveyed less than 40% have classroom dictionaries or atlases and fewer than 40% have auxiliary mathematics teaching materials.

**Figure 5.1: Availability of Textbooks
in Grades 1-5 in SECAB Countries - 1991
(in percent)**



Source: SECAB, 1991

Figure 5.2: Sources of Financing for Teacher Guides, 1991



Source: SECAB, 1991

Financing of Textbooks and Teaching Materials

Public financing of textbooks and instructional materials in most countries in LAC is inadequate. In Costa Rica and Venezuela, for example, between 1 and 2% of primary education spending goes to educational materials. Mexico does better, at 4%, as shown below:

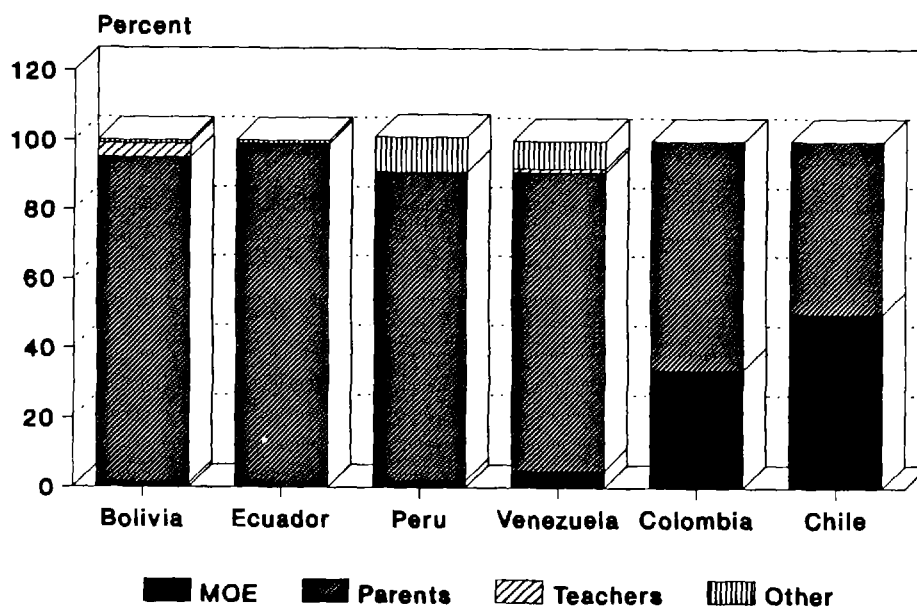
**Table 5.1: Public Financing of Educational Materials
for Mexico, Costa Rica and Venezuela, circa 1989 (1990 US\$)**

	MEXICO	COSTA RICA	VENEZUELA
Primary Unit Costs	\$114	\$181	\$213
Primary Unit Spending on Educational Materials	\$4.50	\$3.93	\$1.50
Educational Materials Expenditures as a Percentage of Primary Spending	4%	2%	<1%
Educational Materials Expenditures as a Percentage of Education Budget	1%	<1%	<1%

Source: Basic Education in Mexico (World Bank, Report No. 8930-ME); Costa Rica Basic Education Rehabilitation Project SAR (World Bank, Report No. 9893-CR); Venezuela 2000: Education for Growth and Social Equity (World Bank, Report No. 11130-VE). Table cited in Carlson.

Figures 5.2 and 5.3 and Annex Table 9 provide a breakdown of the sources of financing of school supplies for the six SECAB countries.

Parents pay more than 85% of the costs of textbooks in Bolivia, Ecuador, Peru, and Venezuela. Only in Chile does Government pay for half the costs of textbooks, while in Colombia Government pays for 34%. This means that economic pressures on poorer parents are significant, and it is likely that children from the poorest families are the ones with the fewest books.

Figure 5.3: Sources of Financing for Textbooks, 1991

Source: SECAB, 1991

Management Issues in the Provision of Teaching Materials

Public and Private Sector Roles. The public sector has a role to play in textbook provision in virtually every country in the world, be it financing, publishing, printing, distributing, regulating, or some combination of the above. Empirically, with respect to the provision of textbooks, there is no entirely free market. On the other hand, with few exceptions, the private sector is also an important actor in this process. Who should be responsible for what in the provision of educational materials in LAC requires a country-specific analysis of the capacities and costs of both public and private sectors; "pedagogical and economic pragmatism should be the guide rather than ideological predisposition toward either the private or the public sector" (Farrell and Heyneman, 1989).

A related question is who should choose the textbooks: the Ministry of Education, state educational authorities, teachers, parents, or some combination of the above. The experiences in four countries illustrate the issues with regard to these questions.

Mexico offers no choice to either teachers or parents in the selection of textbooks. This reduces the sense of involvement in the program and the commitment among teachers, parents and students to use and conserve the textbooks distributed. In some instances, this has even led to boycotting of textbooks by teachers, who felt that the books are poorly adapted to Mexican reality, particularly in rural areas. In fact, in 1992 thousands of teachers protested in the streets of Mexico City against proposed revisions in the history textbooks, claiming they distorted the period of Porfirio Diaz.

Because the student population in *Costa Rica* at the primary level is relatively small (approximately 500,000, compared to Mexico's 15 million) and homogeneous, it was decided to produce just one national textbook series for use in all schools, selected by the government. This resulted in economies of scale (for textbook development, production and distribution) and ensure conformity to the new national curriculum being introduced. At the same time, the development of educational materials by teachers (and regional educational materials centers) is encouraged and financed by the MOE - basic school supplies, teacher manuals, and training in their utilization will be provided. In this way, both the economic advantages of a national textbook program and the pedagogic advantages of teacher-developed materials are preserved.

In *Venezuela*, parents, not the government, select the textbooks they buy for their children. In theory, it is the responsibility of each school director to ensure that only MOE-approved textbooks are bought; in practice, directors must accept whatever textbooks students bring to class because textbooks are so scarce. The government's standard setting and regulation of private sector textbooks does not work. In 1991 only 6% of the books submitted to the MOE for review and certification were approved, which highlighted the need to develop a new objective and transparent evaluation process for textbook certification. Systematic textbook evaluation criteria were developed in 1992, although they have yet to be applied. These criteria include increased emphasis on textbooks which promote: an interactive, participatory educational process; classroom discussion; activities outside the classroom; multiple correct answers; and the "processing" of information, as opposed to memorization. The methodology developed is a detailed evaluation instrument which grades each textbook on content, pedagogy, exercises, and language presentation. 180 questions are included in the instrument (70 on content, 68 on pedagogy, 25 on textbook exercises, and 17 on language presentation), all based on a scale of 1-3. Each textbook is to be evaluated by 2 experts, and a third person will ensure correct application of the instrument and collation of results. All evaluators will remain anonymous to the publisher. Given the highly subjective, slightly mysterious nature of textbook evaluation in the past, this new "transparent" qualitative evaluation instrument is a big improvement.

In *Brazil*, in theory, since 1985 the selection of textbooks is the responsibility of individual teachers, based on a catalogue of textbooks provided by the Ministry of Education. Teachers are supposed to select the books they want and forward their requests to the National Textbook Program (NTP) via the state or municipal education office. Once orders are collected

from around the country the NTP negotiates prices and quantities with private publishers, so as to maximize economies of scale from bulk purchasing.

In practice, few teachers possess the necessary information to make an informed decision, and often are excluded from the selection process altogether. The 1992 catalogue is 78 pages long and includes more than 2,000 textbooks, but provides no information whatsoever beyond the title, publisher and code number. Teachers in rural areas often never receive either the catalogue or order forms. But most importantly, the names and quantities of textbooks ordered each year depends on the financing available, not on textbook needs and desires as expressed by teachers. For example, in 1992, 80 million textbooks were requested nationwide, but funding was sufficient for just 8.8 million. The result is arbitrary selection by the NTP at the central level, and teachers must accept whatever textbooks are sent to them. This suggests a need to reduce the number of textbook titles offered in the catalogue, along with increased description of textbook content and much wider diffusion of the catalogue. Given the regional disparities in Brazil, catalogues should also be geographically targeted so as to increase the likely relevance of the textbook to the school environment.

Logistics. Books must be written, designed, typeset, produced, warehoused, distributed, and supported with training. Furthermore, each stage must be financed at the right time in order to ensure on-time delivery to schools. Even assuming sufficient investment and recurrent financing for all stages of this process, the sequencing of these activities, as well as the coordination among key actors, is a daunting task.

The *Mexican* government writes and publishes its own textbooks, with limited input from the private sector. In part because of this, it took the National Commission for Free Textbooks (CNLTG) eleven years to complete its initial series of textbooks for Grades 1-6, and it was generally agreed that these books were not as good as those available from private publishers. By seeking expert advice from private publishers, the MOE could have saved time and money, while improving textbook quality. The CNLTG produces about 75 million textbooks each year. Approximately 75% of production is done in Mexico City at the CNLTG's massive printing plant, which often operates 24 hours a day. The other 25% of production is contracted out to the private sector. This arrangement has the advantage of ensuring that government facilities are fully utilized, while phasing in the participation of the private sector. The disadvantage of this arrangement is the low quality of textbooks produced, because CNLTG's printing facilities are out of date and often strained beyond capacity.

The CNLTG uses publicly-owned and privately-contracted tractor-trailer trucks (and even trains) to transport books from the central printing plant to warehouses located in the capital city of each of the country's 31 states. However, distribution beyond this level has often been problematic, because of inadequate or unavailable storage facilities at regional levels, the high cost or lack of private sector transport to rural areas, the difficulties of access to rural schools, and poor regional organization within the MOE. There is considerable anecdotal evidence of

textbooks rotting in state warehouses, or being left out in the open air such that they are quickly ruined by sun and rain.

The textbook distribution system is being reformed in four states under the Mexico Primary Education Project, a US\$350 million project with financing from the World Bank (US\$250 million). The project will finance the construction and equipping of a network of about 43 warehouses, located strategically across the four states and easily accessible by 3.5 ton trucks. Textbooks and materials will be delivered to these warehouses, and then assembled in packages according to the needs of each school in the region. These packages will then be delivered to the offices of school supervisors, which will be expanded to accommodate educational materials. Supervisors will then be responsible for distribution to the schools, using four-wheel drive vehicles financed by the project as part of the improvement of the supervision system.

In *Costa Rica* in the first textbook program (1983-87), the MOE assumed responsibility for the preparation of the full series of primary level textbooks, comprising four subjects for each of the six grades, plus teachers' guides for all 24 texts. MOE personnel authored the books, while printing was done by national competitive bidding. Approximately 2 million textbooks were printed and distributed free of charge to primary schools, in addition to 150,000 teachers' guides. Workbooks for the 24 textbooks were also written by MOE personnel, but printing, distribution and sales were turned over to the private sector. The private sector assumed all costs, and sold workbooks in bookstores or directly in schools. Fifteen percent of the proceeds were turned over to the MOE as a form of copyright fee. Logistical hurdles in designing, printing and distributing textbooks were handled relatively smoothly, in large part because of considerable financial and technical assistance from USAID.

The second textbook program in *Costa Rica* is just now getting underway. New textbooks, teachers' guides and workbooks are being designed, because the MOE considers the textbooks developed in 1985 to be inconsistent with the new student-centered, interactive curriculum being introduced. Unlike the first case, however, specialist textbook authors and artists will be contracted through international competitive bidding to develop high-quality materials which must be "validated" (i.e. reviewed by pedagogic experts and then field-tested in 60 urban and 60 rural schools) and revised before final payment is made. International TA will assist the MOE in this process to ensure quality.

Printing of textbooks and teachers' guides will be done by international competitive bidding (not national, as in the first case), and book specifications are such that books should last 3-4 years. As for workbooks, their printing and commercial distribution will be contracted out by international competitive bidding, with firms selected based on distribution capacity and retail price. As before, the MOE will receive 15% of the proceeds from workbook sales, which in this program will be added to the revolving fund set up under the project.

Distribution of textbooks will begin with delivery by printers of appropriately packaged textbooks to the MOE's central warehouse. Delivery by printers to the central warehouse, and notification of school associations regarding final delivery dates, must be 30 days before distribution to sub-regions. MOE distribution personnel will receive training and equipment (including computers), and are developing a clear inventory control system.

In *Venezuela* at present, textbook distribution is undertaken and financed by private publishers through commercial outlets, with the exception of those few books purchased of the MOE. No funding nor mechanisms exist for distribution: the MOE simply informs regional educational authorities that books are available in the warehouse in Caracas, and that it is their responsibility to come and get them. There are numerous anecdotal reports of thousands of books decaying in MOE warehouses in Caracas and state capitals. The fact that these same materials are sold in bookstores around the country gives them a clear market value and makes them susceptible to theft and corruption.

In *Brazil*, because NTP funding is typically uncertain and released late, textbook production by private publishers is rather chaotic.¹⁶ More specifically, there is insufficient time to: (a) research prices for negotiations between the MOE and publishers; (b) obtain the necessary raw materials; and (c) plan rational schedules for printing, binding and delivery. This results in overloaded production capacity, poor quality and higher than necessary prices.

Most printing and binding facilities in Brazil are large, highly mechanized and up-to-date. In fact, production capacity would be more than sufficient in terms of quality and quantity if: production schedules were not overly compressed; printing personnel improved their skills; and quality control measures were implemented by the NTP.¹⁷ On the other hand, printing prices appear to be on average 40% higher than in Europe and more than 100% higher than Hong Kong.

Until 1992 textbook distribution was extremely problematic. Bidding was done on price alone with no demonstration of capacity. Contracted companies often delivered the wrong books in the wrong quantities in the wrong packaging at the wrong times.¹⁸ This led the NTP to turn to the Post Office in 1992, whereupon distribution according to all parties (NTP, state, municipal and school authorities) improved significantly. Inventory control, on-time delivery, and the condition of books upon arrival are said to be much better than before. In return for

¹⁶ In 1992 the private sector produced 93% of all textbooks, with 34% of the market controlled by two publishers.

¹⁷ The private publishing industry works at just 60 percent capacity for most of the year.

¹⁸ In January 1992 it was revealed that large number of textbooks had been shredded for sale as pulp!

this service, the NTP pays the Post Office according to a formula based on expenses plus a fee per kilo (of textbook) delivered.

Content of Physical Specifications of Textbooks. While detailed information is lacking, it appears that many textbooks in LAC incorporate poor pedagogy and are not adequately articulated with the curriculum or with teacher knowledge and capacity. Much more work needs to be done on analyzing content quality of text books.

Throughout Latin America the physical specifications of textbooks also appear to be inadequate. Books must not only be built to last, but must also be conserved. Unfortunately, few students are taught to care for their textbook. By contrast, ask any current or former public school student in the United States what their first homework assignment of every school year is, and they are likely to respond "Cover the textbook!"

The typical textbook from *Mexico* is designed to last just one year. It is printed on low-grade newsprint paper, which is uncoated and easily torn. Most books are in four colors with numerous illustrations. The cover is lightweight, unvarnished cardboard, and binding is by glue-immersion, with no stitching. The poor physical quality of the textbook is directly related to the government's policy of providing all students with a full set of textbooks for them to keep. Expenditures for better quality books would simply be too high under the policy that children keep their textbooks.

Unfortunately, many textbooks do not even last one year. Because students are given these books at no charge, and receive no training in their conservation, they do not always appreciate the value of these books. In many schools visited by World Bank staff, textbooks (or pieces of them) were found strewn on the ground, torn, in puddles, or simply gathering dust in some corner. Increasing cost recovery and educating both students and parents about textbook conservation would increase the useful life of these books.

Furthermore, simulations show that a book made to last three years would cost less than three times the cost of a book which lasts only one year, particularly if distribution costs are included. This means the government could improve the physical characteristics of its textbooks and save money at the same time (which could go to finance supplemental educational materials). This would require changing textbook ownership policy from the student to the school, so that books could be re-used.

In *Costa Rica*, in the 1985 textbook program, books were designed to last three to four years. Paper specifications and cover quality were adequate, although the binding (glue) was not optimal. Under the second textbook program (financed by the World Bank and IDB), books will again be designed to last three to four years. An average unit printing cost of US\$2.35 should be more than sufficient to ensure good paper quality, a thick cardboard, waterproof cover, stitched binding, and four-color printing.

The paper used to produce textbooks in *Venezuela* is of mediocre quality. Local production of high-quality textbook paper is limited, such that it has to be imported (with high tariffs), resulting in books which are too expensive for the basic education textbook market. Meanwhile, textbook covers are attractive although not as sturdy as they should be, and "perfect binding" (glue injection) is used rather than no stitched binding. Both covers and binding would have to be upgraded for textbooks to have an expected life span of 3-4 years.

The *Brazilian* Ministry of Education claims that textbooks last for 3 years. However, visits by World Bank missions to numerous schools confirmed that textbook life was a maximum of one year in Grades 1 and 2 (with many unusable after 4 months), and perhaps one and a half years in Grades 3 and 4. The majority of damage appears to be caused by transport to and from school, as few textbooks were adequately covered and even fewer were carried in appropriate-sized book bags. The physical specifications of *Brazilian* textbooks should be improved. Lessons in textbook repair and conservation should be given at the start of every school year, with periodic textbook repair activities conducted throughout the term.

Conclusions

Why do so few primary classrooms in Latin America have sufficient supplies of quality educational materials, including textbooks? The reasons are simple. They include:

- Inadequate financing
- Weak logistical preparation
- Inappropriate physical specifications
- Unclear definitions of the respective roles public and private sectors play in the supply of educational materials

Furthermore, the content quality of the textbooks may well be inadequate, in part as a result of inadequate selection and evaluation criteria.

B. Strategies for Reform

Of foremost importance is the need to establish at the highest level a long term and uncompromising commitment to adequate public financing. Among the countries studied, Mexico appears to be the only country to honor this commitment through a period of economic difficulties. An educational materials program, including textbooks, is a complex, long-term investment in a system, rather than a temporary one-time, high-cost donation of books and other supplies. Elements of "best practice" can be found in a variety of countries. For example, a

good textbook and educational materials program would require Mexico's commitment to public financing, Venezuela's new procedures for ensuring the quality of public-financed materials, Brazil's policy of teacher selection of textbooks and the use of the private sector for both publishing and printing, and Costa Rica's emphasis on the involvement of school associations in the distribution and financing of educational materials. The key issues revolve around availability and finance, the appropriate role of the public and private sectors in writing, publishing and printing educational materials, the evaluation of the content quality of the textbooks, the role of textbooks at the local level, and the types of teaching learning materials to be supported.

Availability and Finance

A reliable, sufficient supply of textbooks and other educational materials requires a long-term commitment by the government to adequate investment and recurrent financing. As a minimum target, at the primary level governments should strive for one textbook in reading and one in mathematics per student, a classroom library consisting of two books per student, and in the later years of primary education, additional textbooks (perhaps at a 2:1 ratio) in social and physical science. This minimum textbook and supplementary educational materials program at the primary level would cost roughly US\$5 per student per year, or between 2-5% of the total educational budget. This estimate is based on World Bank financed projects which provide for per student spending for educational materials in Mexico, Brazil, Costa Rica and Venezuela of US\$4.50, US\$3.81, US\$2.50, and US\$4.34, plus library and distribution costs. The Ministries of Education and Finance would agree that these levels of funding would be protected.

But public funding should be augmented by private support from families, mainly as a means of encouraging a sense of ownership and of providing school level financing for local purchases of educational materials. If need be, the state could forego other, lower priority, items required from parents, such as school uniforms.

Governments may turn to international development agencies, such as the World Bank, USAID and the IDB, for short-term financing, on the grounds that educational materials have been shown to be a profitable investment in internal efficiency, as well as a cost-effective means of improving primary education overall, which has consistently produced the greatest social rate of return, among all education levels. Such programs should require borrowers to increase the percentage of basic education expenditures allocated to the financing of educational materials. External donors should only finance the recurrent expenditures generated by the investment program on a declining basis, so that governments gradually assume responsibility for sustaining the program, making the program a routine element of the education budget.

In fact, only textbook provision programs which can be reliably sustained are worthy of investment. In other words, the size of the initial investment for a textbook program should be tailored to best estimates of the available recurrent financing to maintain it. Given the range of

educational materials available on the international market, MOEs and parents should ensure that each school has enough money to purchase a minimum "package" of supplementary materials, leaving the actual composition of that package to the school director, in consultation with teachers and parents.

While financing and textbook availability are fundamental, they are not sufficient to ensure that learning takes place. The content of textbooks must be adequate and teachers must be trained to use them.

Public and Private Sectors Roles in Writing, Publishing, Printing and Distribution

Whether to develop new textbooks, or to purchase existing ones, is a country-specific task, requiring analysis of local publishing and printing capacities, relative costs of the alternatives (particularly economies of scale), and certain socio-political considerations. Nonetheless, the Latin American experience suggests that most LAC countries have the size and technical skills to justify local publishing, by private firms or government agencies (the latter only if technical assistance from private publishing experts is provided). This ensures pedagogical conformity with national curricula and preserves national "sovereignty" over educational content, an important factor in LAC. This does not mean foreign textbook publishers should not be allowed to submit their titles for consideration by Ministries of Education - only that local publishing should be encouraged.

LAC experience also strongly suggests that textbook printing should be done by private firms with the incentive to maintain quality while holding down costs. Ideally, firms should be chosen through international competitive bidding, with some marginal preference given to local firms.¹⁹ While Mexico has certainly demonstrated that nationalized printing facilities have the capacity to churn out massive quantities of low-cost, low-grade textbooks, private printers are better situated to balance textbook quality, quantity and price for the most economical solution on a sustainable basis.

There is a clear need to substantially improve the physical specifications of textbooks in LAC, and to introduce new practices for textbook conservation and repair. Paper quality, a durable cover, and binding strength are especially important. This will require greater interaction between Ministries of Education, publishers and printers for definition of the range of physical specifications and clarification of the cost and durability implications of different choices.

The distribution of textbooks and other educational materials should be a cooperative effort, with MOE financing of private distributors (or the Post Office) to the regional level, and school association/parental involvement for transport from the regional level to the school. Only

¹⁹ The World Bank standard for local preference in procurement of goods is 15 percent.

in cases where the private sector is unwilling or unable to handle distribution should the public sector assume responsibility (e.g. to isolated, hard-to-reach rural schools). It is often a good idea to include distribution as part of the printing contract.

Content Quality

The content quality of textbooks can and should be regulated by appropriate procedures and regulations, enforced by the Ministry of Education. The recent elaboration of transparent textbook evaluation criteria in Venezuela provides an excellent example of regulation which encourages private sector competition to produce the highest quality textbook, in terms of content, at the lowest price. Only books which pass such criteria should be eligible for textbook financing, and both national and international publishers should be encouraged to compete. Selection by individual schools of MOE-certified textbooks is preferred, but only if the logistical capability exists to implement such a policy. Selection by schools would permit all teachers to work more closely together and would ensure compatibility between classes.

Whatever the textbook selection policy, it is imperative to develop clear, transparent, routine, and deadline-bound textbook selection, procurement and distribution procedures. Responsibility and accountability at each stage of the process must be clearly specified and agreed to.

The selection policy should encourage the incorporation of modern pedagogical practices into textbooks. An example of such criteria could include the following: (i) students must use prior knowledge relevant to the educational experience; (ii) students must do some free writing or calculating for systematic thinking; (iii) students must self evaluate their initial work and the teacher should evaluate the final individual or group work; (iv) the local context should be taken into account by students during the learning experience; (v) concepts elaborated through the learning experience must eventually be compared with general or national statements; (vi) options must be offered to the student for enhanced motivation and thinking; and (vii) new concepts learned in the experience must be applied in a new situation for formative evaluation.

The Role of Textbooks at the Local Level

Based on a review of experiences in Mexico, Costa Rica, Venezuela, and Brazil, it seems clear that the most cost-effective approach is to produce higher physical quality textbooks. This would mean that textbooks would belong to schools, and therefore could be used for several years and could be rented by students. The greater costs up front to produce more durable textbooks would be compensated by the money saved in the long run. Grades 1 and 2 textbooks could be left at school and not taken home, reducing damage caused going to and from school. Simple, low-cost, one-color workbooks should also be provided to students. These would belong to the students and could be replaced each year. In principle these should be financed by

parents. Weatherproof closets should be provided to all classrooms so that educational materials can be kept secure.

For textbooks to last, proper conservation and repair practices need to be implemented throughout Latin America. Self-instructional modules on textbook conservation should be developed and taught at the beginning of every school year, and basic materials for textbook care (especially reinforced tape) should be supplied. This will require training of teachers, but also increased parental involvement in textbook financing and distribution so that families perceive a stake in textbook supply.

Finally as noted above, parents should be asked to provide a portion of the financing of textbooks, as a means of encouraging a sense of ownership and of ensuring that schools have a source of financing for purchasing supplementary materials.

Types of Teaching/Learning Materials

Teaching/learning materials do not simply mean textbooks. In many modern classrooms, specific textbooks for the lower grades of primary school are no longer used, and teachers use a vast combination of self-learning modules and materials to teach reading, writing, and arithmetic. The provision of teaching/learning materials in Latin America, therefore, should gradually move towards a combination of textbooks, workguides, workbooks, library materials, and the means (photo-copiers, word processors, etc.) whereby teachers can create their own materials.

Conclusions

The main strategies for reform include the following:

- A long-term uncompromising commitment to public financing of textbooks at a cost of about US\$5 per student, accompanied by some cost recovery from parents to ensure local level financing and some sense of ownership
- An emphasis on private sector printing and publishing
- Transparent criteria for textbook selection
- An increased emphasis on textbooks with modern pedagogical approaches
- High physical quality of textbooks, adequate for three years use, accompanied by staff and student training in proper conservation techniques
- A gradual shift from textbooks to multiple teaching/learning materials

Teachers and Their Classroom Behavior

A. Issues and Trends

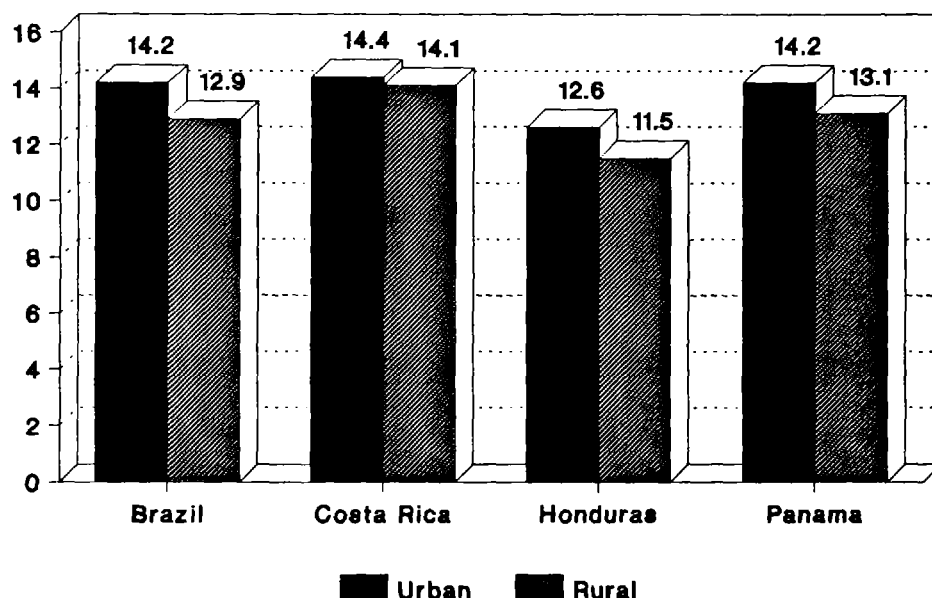
Teacher Qualifications and Working Conditions

Formal Qualification of Teachers. The number of teachers in LAC has increased over the last twenty years from 2,380,000 to 5,250,000 between 1970 and 1989. Teachers now comprise 4.9% of the labor force among twelve countries surveyed (Annex Table 10). Primary school teachers are estimated to make up 85% of this total, or 4.2% of the labor force. As can be seen in Annex Table 11, 79% of all primary teachers are formally qualified, i.e. have a recognized teacher training degree. The definition of formal qualification varies from country to country. Many countries are now requiring three years of post-secondary training for qualified teachers. A few countries still require only a secondary level degree in secondary level teacher training colleges.

There is evidence in several countries, e.g., Brazil, Costa Rica, Honduras, that many of the un-qualified teachers are located in rural areas. Figure 6.1 compares years of schooling for teachers in urban vs. rural locations in four countries (also see Annex Table 12).

Selection into the Teaching Profession. Students entering the teaching profession have a low academic profile and low socio-economic status compared to other students in higher education. There is some evidence that the socio-economic status of entering students has gone down over time. A study of applicants and graduates from the Pedagogical Institute of Chile between 1976 and 1992 shows that more than 80 percent of the students had aptitude entrance scores which were lower than students entering other professions (Gysling, 1991). Students majoring in primary education had lower scores compared to students majoring in secondary education. The number of education students in Chile from low socio-economic sectors increased over the last fifteen years from 10.3% to 22.2%. A study of Peru showed that students entering the teaching profession were often involved in work-study programs, which generally attract low-income students unable to afford full time study. In addition, the Catholic University of Peru has had to devise separate admission tests and requirements for students enrolling in education, since these entering students could not attain even the minimal general requirements for entrance which are easily met by students entering other professions. This phenomenon is not limited to Latin America. In past decades women had fewer labor market options; therefore higher s.e.s. women were more likely to select a teaching career. The teaching profession competes, from this point of view, with other more attractive professions from an economic and status point of view (Moore Johnson, 1990). The increasing percentage of teacher trainees from lower socio-economic backgrounds may not be a bad trend. Traditionally in many countries teaching has been a means of upwards mobility of the poor; and teachers with backgrounds similar to those of their students would be more sympathetic to their needs.

Figure 6.1: Primary Teachers Mean Years of Schooling by Urban and Rural Locations, 1989



Source: Psacharopoulos, et. al. 1993

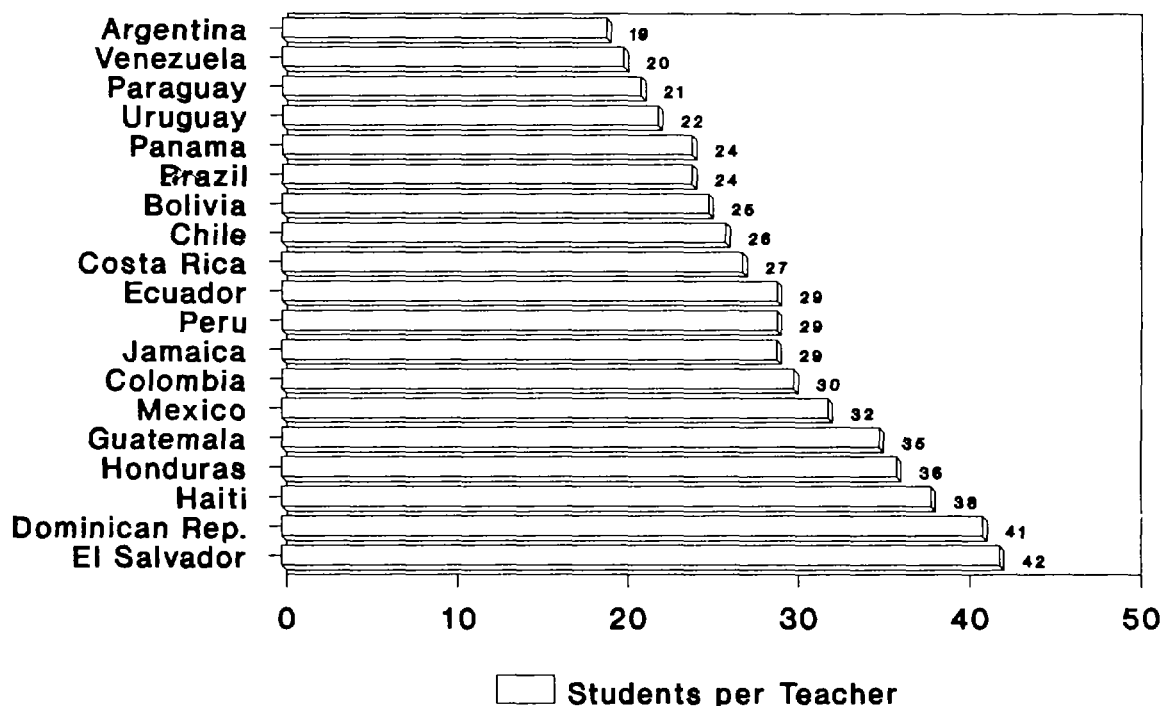
Teacher Salaries and Student Teacher Ratios. Chapter VII (Financing of Primary Education) examines the trends in teacher salaries. Briefly, average teacher salaries have gone down significantly over the last ten years, but it is not clear whether teachers have suffered more than other civil servants or more than comparable occupations. Table 6.1 and Figure 6.2 summarize the situation with regard to student teacher ratios.

Table 6.1: Student Teacher Ratios in LAC

Country	1980	1989	Change
Argentina	20	19	-1
Bolivia	20	25	5
Brazil	26	24	-2
Chile	26	26	0
Colombia	31	30	-1
Costa Rica	28	27	-1
Dominican Rep.	40	41	1
Ecuador	36	29	-7
El Salvador	48	42	-6
Guatemala	34	35	1
Haiti	44	38	-6
Honduras	37	36	-1
Jamaica	41	29	-12
Mexico	39	32	-7
Panama	27	24	-3
Paraguay	27	21	-6
Peru	37	29	-8
Uruguay	22	22	0
Venezuela	27	20	-7
Average	32	29	-3

Source: UNESCO/OREALC

Average student teacher ratios have gone down from 32:1 to 29:1. This means that teachers are being paid less but need to work less. The only countries where these ratios have not gone down are Bolivia, Chile, Dominican Republic, Guatemala and Uruguay. Countries with ratios 25:1 or lower include Argentina, Bolivia, Brazil, Panama, Paraguay, Uruguay and Venezuela. Several of these countries, especially Bolivia, Brazil, Venezuela, and Paraguay do not have the highest school completion rates, suggesting that low student teacher ratios are not related with retention of students in school.

Figure 6.2: Student Teacher Ratios in LAC, 1989

Source: UNESCO-OREALC.

Pre-Service Training. As noted above, nearly all LAC countries now require three years of post-secondary education for teachers to be qualified to teach at the primary level. In most countries teachers are now trained in universities and other general education institutions, rather than in specific teacher training schools. The objective of this reform has been to give teachers a status comparable to that of other professions. However, by training teachers in general education institutions, many students who start off in education courses end up entering more prestigious careers. Teacher training programs in universities reportedly put more emphasis on subject matter content while traditional teacher training schools tend to place more emphasis on pedagogical practice. University-based training programs seem appropriate to secondary level teachers but may be counter-productive in the preparation of primary school teachers.

There are very few studies on the quality of teachers in the university training programs. A recent survey of Chilean university professors (Schiefelbein and Tedesco, 1992) compared the

personal and academic characteristics of professors in different disciplines. Education had a higher proportion of female professors than the university taken as a whole and education professors were older than those in the rest of the university system. Education departments had the lowest number of professors with Ph.D's (5% compared to 18% for the rest of the university system), and a larger proportion of education professors with Masters degrees (40%) compared to the rest of the university (28%). Most advanced education degrees had been acquired in national universities while in other disciplines the degrees were acquired abroad. Finally a higher proportion of education professors preferred teaching functions (34% vs. 23%) to research functions (9% vs. 14%). In short, education professors had lower status and training than their counterparts in higher education institutions.

Pedagogical Practices

There is little systematic information in LAC on teachers' pedagogical practices and classroom behavior. The following discussion is based on two of the authors' personal experiences of working in nearly all LAC countries over a twenty year period, as well as on developed country research.

At the outset it should be stated that teacher's classroom behavior varies greatly in LAC, Furthermore teachers in LAC do not have a easy job. They may well be inadequately paid and poorly supported. Furthermore, as noted in Chapter III, children in LAC primary schools bring many difficulties to the classroom, largely a result of the poverty and illiteracy of their parents.

Typical Classroom Practices in LAC. In most LAC classrooms actual teaching time during the day may be quite low, with much of the school day occupied with routine and administrative matters. Specific teaching is almost invariably undertaken through presenting expository material to the entire class—often through writing the content of the lesson, or explanations, on the blackboard, which is then copied by children. The teacher uses this same methodology for all situations and audiences. In many cases the exposition is inadequately structured and sequenced, and the teacher may not stop to seek feedback from students to adjust the presentation based on their responses. Normally the teacher will not ask students to participate in the exposition by selecting examples of sub-topics for study. Alternative teaching/learning methods, such as small group instruction, cooperative student learning, individual instruction, group problem solving and decision making, free writing, etc., are rarely used. At the higher levels of primary education and in secondary education, classroom discipline may be a problem, often a result of the teachers' own lack of capacity to define objectives and his/her inadequate classroom management skills.

In LAC most teachers have spent sixteen years seated at their desks while their teachers lecture, write on the black board, narrate events, or give definitions and facts which they have to memorize. Currently many newly trained teachers have been taught a variety of new teaching methods; but the teacher training itself is traditional—consisting of lectures and memorized

theoretical steps. Very few of these teachers have participated in an "active" pedagogical learning process. Furthermore practice teaching is usually of very short duration and inadequately supervised. Since teachers acquire the techniques for teaching children on the basis of how they were taught, it is difficult to introduce new techniques to teachers. Within the classroom teachers are isolated from their colleagues and only interact with "uneducated" students, thus further limiting possible professional growth.

Teachers often feel that it is an important part of their work not to allow mistakes. They expect their students do their work "well" the first time they try. Teachers become so obsessed with obtaining this result that they do not invest more time providing incentives for learning. The organization of schools makes it difficult to introduce new pedagogy. Teachers are not likely to assign complex assignments such as free compositions, because they must evaluate and revise them in their own free time, since time for this activity is not available within the regular working hours. Therefore free writing is minimized and most students write no more than two short essays during the year, (it is common to ask the students to write a page about their vacation or a national event).

While most Latin American countries have an official calendar of 180 days, the actual number of school days in many cases approaches 120, a result of a combination of holidays, teacher absences, and strikes which may last a month or longer. Furthermore, in some crowded urban slum areas, the length of the school day may be less than three hours because of triple shifting; in other cases the teacher may arrive an hour or two late and leave earlier than usual. Even when the teacher is present for the full four and half or five hours of the typical double shift primary school, the actual time of active teaching may be as little as two hours per day, with the rest of the time spent in various administrative, routine, or repetitive activities. A final element in the process is the possibly inadequate requirement for children to do homework, which is effectively an extension of teaching time beyond the regular school day. Effective teaching time is also reduced by the long distance rural teachers have to travel to and from the schools given that they often don't have housing or eating facilities nearby; little flexibility to replace ill teachers with substitutes; and the fact that teachers retire during the school year. The result of all of these problems is that children in LAC are fundamentally short-changed. Considering the inadequate amount of time available it is remarkable that many do learn something in the course of the school year.

Another way of looking at the problem of inadequacy in the teaching/learning process in LAC is to look at attitude rather than pedagogical techniques. In many public systems teacher morale can be very low because of a combination of low salaries, excessive bureaucracy, and political appointments to administrative jobs. Poor morale or attitudes in a classroom can be striking; in many classrooms the observer will sense inertia and boredom, with both the teacher and the student "just going through the motions".

Classroom Heterogeneity. As noted in Chapter II, LAC classrooms are characterized by high age heterogeneity, a result of late entry into first grade in every LAC country except Mexico and Argentina, and then of high repetition rates. This makes any teacher's job, but especially one using traditional pedagogy, difficult. Another element leading to high classroom heterogeneity and therefore difficulty for teachers is the existence in regular classrooms of large numbers of children with learning disabilities, psychological problems, and low native ability (IQ), who in developed countries would normally be segregated into "special education" classes and allowed to proceed at their own pace. Because of a lack of resources, less than 1% of all LAC school children receive special attention for these problems; and the vast majority are in regular classrooms being taught by teachers with little understanding of these problems. Research has shown that many "learning disabilities" are eventually overcome or compensated for; however, in a typical LAC classroom continued frustration and failure at the lowest levels may well cause the "learning disabled" child to drop out.

Modern Classrooms. In contrast many individual teachers and schools in LAC use modern pedagogical techniques, with adequate teaching materials, and are achieving good results. The majority of these are in private fee-paying schools. However, several large scale experiments have shown that modern pedagogy can be introduced into publicly-financed primary schools and the result can be increased learning. The *escuela nueva* in Colombia, one example of a modern school operating in a rural setting, is operating well in 10,000 schools. Another system which works well is *Fé y Alegría*, a private publicly supported Catholic school system operating mainly in Venezuela, Peru, and Bolivia and directed at poor children. Both these large scale programs integrate good school management with a combination of in-service training and teaching materials. In addition to these two large scale experiments, as noted earlier, Colombia, Uruguay, Chile, and Jamaica have dramatically reduced repetition rates over the past decade. Boxes 6.2 and 6.3 in the next section summarize the experiences of these two programs.

Conclusions

The following conclusions can be drawn from this review of teachers and their classroom behavior:

- Teacher salaries have declined over the past decade, with possibly adverse effects on teacher morale, but student teacher ratios have also gone down.
- A typical classroom in LAC is characterized by inadequate teaching time, a single pedagogical approach consisting of teacher exposition, which is often inadequately organized, an emphasis on "lower-order" cognitive skills, very high classroom heterogeneity, and in many cases, poor teacher attitudes. This inadequate classroom environment most adversely affects students from lower socioeconomic groups as evidenced by their lower achievement scores.

- Current pre-service training programs are not helping teachers prepare for an "active" or personalized teaching strategy fitted for helping students learn. Pre- and in-service teacher training, when appropriately carried out, can help improve student learning; nevertheless, in many cases, training offered to date has not been effective.
- The amount of time spent actually teaching is affected by disadvantageous working conditions and results in large time wasted in bureaucratic or repetitive activities.
- The existence of several large scale experiments as well as national programs which have increased learning and/or reduced repetition suggest that a concerted local and national effort can have significant results.

B. Strategies for Reform

This section summarizes the new teaching strategies which should be brought into the classroom. It then discusses the means by which such strategies can be implemented. Five new teaching strategies, as well as a process for monitoring classroom practices, are recommended.

New Teaching Strategies

Audience and Context Specific Instructional Practices. Modern pedagogical research in the developed world has emphasized the complexity of the teaching process. Even within the same class, what constitutes effective instruction will vary according to subject matter, group size and composition, and specific instructional objectives being pursued. If students need new information, they are likely to need group lessons featuring teacher information presentation followed by recitation or discussion opportunities. If students are expected to integrate broad patterns of learning, it will be necessary to schedule activities that involve problem solving, decision making, essay composition, preparation of research reports, or construction of some product. The developed country research suggests that in the early grades small group approaches are important and for effective learning to take place, each student should participate overtly and often. In later grades overt participation is less important than factors such as teachers' structuring of the content, clarity of statements and questions, and teacher enthusiasm (Brophy and Good, 1986).

In LAC the age and background heterogeneity of many classrooms, especially in rural areas, as well as practices such as leaving school because of harvest time, family crises, temporary absences of adults, and informal work opportunities, suggests the importance of small group work, especially in lower grades. However, the fundamental issue is not to utilize a single teaching strategy, but rather to make teachers aware of the situational specific nature of the teaching learning process, to give them the tools and confidence to vary their teaching styles, and to ensure rigor and clarity in defining and implementing learning objectives. Given

ingrained current practices, step by step teachers' and students' guides and targeted in-service training are fundamental to help change teachers' pedagogical practices.

Multi-grade Teaching. There is no longer any reason for incomplete schools in rural areas to continue to exist, since effective strategies for multi-grade teaching are now available. Multi-grade teaching requires suitable self-learning modules or textbooks, one chalkboard on each wall for each of the groups working together, and not more than 30 students per classroom. Training in multi-grade teaching must be carried out together with the distribution of self-learning textbooks.

New Strategies for Teaching Reading. Teachers can be trained in a variety of simple but effective approaches to reading. For example teachers can ask students to read simple instructions and then to carry out group learning experiences. Reading instructions, an activity which is close to the real world, would be a powerful incentive to read for understanding. Cooperative learning, where the best students in each group help classmates in understanding what is in the message, frees the teacher for remedial activities. Homework should emphasize that students interview parents and friends and report back in writing and verbally to the class. Teacher upgrading can be carried out in workshops with actual students or with methods such as micro-teaching with video taping. Box 6.1 summarizes ten guidelines for teaching reading and writing as summarized by a group of LAC experts:

Bilingual Education. 10% of the school age population in Latin America speak an indigenous language at home. When most of the first grade students speak Spanish, the non-Spanish speakers may learn from their classmates very quickly and there is no need to use the bilingual approach. But when the native language is spoken for informal communication among students, then the bilingual approach is required for learning to match the new signs with the well known sounds and meaning.

Bilingual education requires management abilities for: identifying the schools where the bilingual approach should be used; allocating native-speaking teachers in bilingual schools; designing and testing textbook prototypes; and carrying out survey research on the areas in which a given variant of a native language can be used. The design and production of suitable textbooks may be a constraint when there are many dialects. Bilingual education also requires a very strong public relations campaign to convince parents as well as teachers of the value of their children becoming literate in the native language. There are examples of the failure of such programs because of a perception by parents that literacy in a native tongue is somehow second class.

"Flexible" Promotion. The theoretical basis for promoting most children is strong. Children's readiness to learn to read and write occurs at different chronological ages; and children in impoverished environments are likely to take a longer time to become literate, especially when they have not been exposed to pre-schooling. In short they may catch up in the second or third year of their schooling.

Box 6.1: Ten Guidelines for Improving Reading and Writing

A recent meeting of LAC experts in reading proposed the following ten guidelines for improving reading and writing:

- Reading and writing should be a policy priority in every country. Both students and teachers should approach the curriculum and related subjects through an integrated approach that has the development of reading and writing practices at its center.
- It is important to foster the use of language through discussions in real life-like situations which respect students' dialectical differences. Both reading and writing should be centered around communicating and expressing oneself.
- Schools must diminish the gap between written and oral language by the conviction that all students can learn.
- In order to stimulate students' creativity it is necessary to reinforce the writing down of their ideas, then reading and discussing them among classmates. To stimulate this process teachers should not continuously interrupt them.
- Teachers should have different types of reading materials at their disposal given that "you only learn how to read by reading"; to make this fun and stimulating you need variety. Different types of books are useful, e.g., children's books, giant books, books full of pictures, story books, magazines, posters, murals, texts produced by the students, texts with oral traditions, and texts that take into account language, previous information and the students' culture.
- At least 15 minutes of class time every day should be devoted to silent reading, given that these periods help provoke the interest of students through browsing, reading, and hypothesizing about the content of the text.
- Students will understand better if the teacher (or someone else) reads a text out loud the first time. Also effective is the simultaneous reading by the teacher and students, of the same text. The teacher may also wish to create working groups in which a student reads to his fellow group mates. These techniques allow students to understand the meaning of the text. When there is a problem, the teacher reads again and again until the whole group reads. This simultaneous approach creates less insecurity among students since errors are less evident. There is also better understanding of the material if everyone is reading.
- A positive exercise involves the choosing of a text of around 150 words by the students and teacher. The student practices reading the text out loud and in time reads faster and more exactly, both in reading and comprehension. This skill transfers over into other texts.
- Non-traditional materials such as containers, posters, magazines, etc. permit teachers to work with low-cost materials while allowing students to formulate their own texts. They also allow the formulation of hypothesis by students with relation to written language, either in an explicit or implicit way, through their sharing of observations and ideas with classmates.
- The meta-cognitive strategies that are most efficient for reading comprehension are: summarizing texts, clarifying the meaning of the text in one's own words, formulating questions about the material read, and predicting, through the use of a title or picture, what the text is about and giving personal opinions on it. These strategies require the students to be self-critical, to think about what they are learning, and to find their own strategies for solving problems.

"Automatic promotion" laws and regulations were enacted in the 1970's in Venezuela, Costa Rica, and Chile and in the 1980's in grades one and two in the Brazilian states of Sao Paulo and Minas Gerais. Following old colonial traditions educational norms and laws are "accepted, but not implemented" by the teaching staff. There were near 20% first grade repetition rates in Costa Rica and Venezuela during their experiment with automatic promotion. Principals reported zero repetition after the law was enacted, but no more than half the repetition rates were eliminated because teachers developed strategies not to promote students while at the same time reporting that they were not officially repeating. For example, teachers asked parents to enroll the child in the same grade the next year in order to help the child "to mature," or asked students to drop out (or parents to take the student out) before the final exam period or not to return after the harvest period. In the case of Brazil there is recent evidence that failures are beginning to pile up again at the end of second grade. This is more than likely a result of inadequate support and follow-up by education authorities, who have not acted strongly and consistently to change teacher behavior. In short while there are many good pedagogical reasons for promoting most children, simply requiring promotion through bureaucratic fiat is counter-productive.

If the curriculum were too demanding and only gifted students could achieve those standards, then a solution might be to simply reduce standards. This could also be of use if teachers have gotten into the habit of failing at least one third of all children no matter what their level of achievement. As noted previously, there is some evidence of this practice. However explicitly lowered standards for promoting from one grade to the next may create serious problems for traditional teachers by increasing the ability range (heterogeneity) within the classroom. Lower standards may also reduce the overall stock of learning (human capital) accumulated as a result of attending school. Some teachers say that automatic promotion eliminates the use of promotion as a tool for controlling discipline.

A more promising and fundamental alternative is to make promotion of the vast majority of children the norm through programs of training and educational materials which result in teachers taking a developmental approach to learning. In Colombia, the *escuela nueva* schools feature multi-grade teaching and promotion to the next grade once a student has achieved minimum educational objectives. Teachers are trained to teach children at different levels of academic achievement in the same class, using self-learning materials available for children with different abilities. Furthermore, in Colombia beginning in 1986, the Ministry of Education enforced by decree that all six year olds should attend first grade; and also increased the provision of pre-schooling through the establishment of "Grade Zero". Uruguay reported over 40% first grade repeaters in 1965. After the "Plan Varela" implemented teachers' upgrading, textbooks, food, adjustments in the daily schedule in rural areas, and other remedial actions, repetition rates dropped to about 20%. A study in Chile also showed first grade repetition rates over 40% in 1967. After training teachers, distributing textbooks, setting up remedial time, providing breakfast and lunch, and other complementary policies, the rates decreased to 20%-30% in the 1970s and to 10%-20% in the 1980s. The Sao Paulo/Minas Gerais approach of automatic promotion from grades one to two is pedagogically sound if accompanied by adequate training and provision of materials. In principle it assumes in-service training to encourage

teachers to adapt more modern pedagogy, continual student evaluation during the first two grades in order to target special assistance to slow learners, and an enriched environment of learning materials.

Monitoring Classroom Practices. It is important for principles and supervisors to develop operational guidelines for monitoring classroom practices. Box 6.2 below provides such guidelines for four key elements: variety in teaching strategies, increased learning time, positive teacher attitudes and order and discipline. Chapter VIII provides further discussion.

Box 6.2: Guidelines for Monitoring Classroom Practices

Positive Teacher Attitudes	
Definition:	Positive teacher attitudes exist when: <ol style="list-style-type: none"> 1. Teachers have confidence in their ability to teach. 2. Teachers are committed to teaching and care about their students. 3. Teachers cooperate in efforts to improve the school and to help each other with instructional problems.
Requirements	Indicators
1. Confidence	<ol style="list-style-type: none"> a. Teachers exhibit and report their own sense of being able to teach successfully. b. Teachers are at ease with learning materials and teaching ideas and integrate them into their teaching.
2. Commitment and caring	<ol style="list-style-type: none"> a. Most students report that teachers are committed to teaching and care about them (the students) personally. b. Teachers set high standards of work and behavior and model these c. Teachers, administrators and parents report that the school is a caring place. d. There is low teacher absenteeism and tardiness.
3. Cooperation	<ol style="list-style-type: none"> a. Teachers plan school activities and their teaching collaboratively. b. Teachers share ideas with each other. c. Teachers and administrators work together on whole-school issues.

Variety in Teaching Strategies	
<p>Definition: In effective schools, the teachers employ alternative teaching strategies to better accommodate student difference and the nature of the material being taught.</p>	
<p>Requirements</p> <p>1. Active engagement of students by the use of a variety of teaching techniques</p>	<p>Indicators</p> <p>a. Teachers use a variety of teaching techniques including individual assignments with worksheets, class discussion, group work, explaining, drill-and-practice, asking questions, and cross-age tutoring.</p> <p>b. When available, teachers make regular use of interactive radio and/or programmed materials.</p> <p>c. Students are actively engaged in the classroom activities.</p>
Order and Discipline	
<p>Definition: Order and Discipline are evident in an effective school when:</p>	
<p>1. Classrooms and classes are well-organized</p> <p>2. School rules and regulations are clearly articulated, are agreed upon by both teachers and students, and are equitably maintained.</p>	<p>Indicator</p> <p>a. Seating arrangements are uncongested.</p> <p>b. External noise levels and lighting are conducive to learning.</p> <p>c. Classroom routines are smooth and efficient:</p> <p>(i) classes start quickly and purposefully;</p> <p>(ii) class rules and procedures are clear and are followed;</p> <p>(iii) assignments, materials and supplies are ready before class;</p> <p>(iv) consistent, equitable discipline is applied quickly and without disruption for all students;</p> <p>(v) positive behavior is reinforced; and</p> <p>(vi) teachers handle almost all disciplinary problems.</p>
<p>Requirements</p> <p>1. Well-organized classrooms and classes</p>	<p>Indicator</p> <p>a. A written code of conduct exists and is known by students and staff.</p> <p>b. Discipline procedures are routine, quick and focus on the student's behavior.</p> <p>c. Students and teachers attend classes regularly and according to an established timetable.</p> <p>d. There is almost no evidence of inappropriate behavior and school facilities are clean and not defaced</p>
<p>2. School rules and regulations</p>	

High Learning Time	
Definition: A school has high learning time when:	
<ol style="list-style-type: none"> 1. The amount of school time used for learning is maximized. 2. Classroom learning time is used effectively. 	
Requirements	Indicator
1. Maximized school learning time	<ol style="list-style-type: none"> a. School events are scheduled to avoid disrupting learning time b. Time use allocation for subjects is clearly established and followed by teachers. c. School day and individual classes start and end on time. d. Extra learning time is provided for students who want or need it. e. There are firm and enforced policies regarding tardiness, absenteeism, and appropriate classroom behavior for both teachers and students. f. Students are achieving tasks assigned at a high rate of success.
2. Efficient use of classroom learning time	<ol style="list-style-type: none"> a. Non-instructional classroom time is minimal. b. Teachers maintain a brisk pace for instruction with clear stop and start clues, and quick introductions of topics. c. Teachers are aware of whole-class needs in pacing lessons, providing assistance to individuals, settings and supervising seatwork, and encouraging out-of-class work for those who need it. d. Teachers correct and return students' assignments and tests quickly.

Source: Heneveld 1993

If these strategies are implemented, as much as three quarters of the current 40% first grade failure rate could be eliminated. A feasible and concentrated package of in-service training, educational materials, and encouraging promotion could reduce repetition in first grade from 40% to 10% and in primary education as a whole from 30% to 5%.

System Wide Strategies for Changing Teachers' Classroom Behavior

The system-wide strategies for changing teachers' classroom behavior include: changing pre-service training, changing in-service training, improving teachers' morale, increasing time on task, measuring classroom practices, and introducing "flexible promotion."

Pre-Service Training. In the long run, improved pre-service training may be the strongest impetus for changing teaching strategies. The main focus in pre-service training should be two fold--increasing teachers' general knowledge, and increasing the amount of supervised practice teaching. Specific teacher training courses should generally be no longer than two years in length with at least sixth months of full-time practice teaching. This is contrary to the practice in most Latin American countries of long pre-service training courses. There should be a much stronger focus on selection and on attracting good students into the field. Programs should explicitly seek students with higher subject matter competence as well as with a vocation for teaching. To attract students into the field, it may be appropriate to offer up front scholarship/loans, which can be rebated for those teaching in slum schools. Public campaigns could emphasize the importance to society of high quality teaching.

In-Service Training. The research on in-service training shows generally inadequate results. To the extent that these programs are designed to provide teachers with another degree (and higher pay) they do not seem to result in changing classroom strategies. Hands-on training programs targeted at changing specific teacher classroom behavior are the only ones which can be successful. The content of in-service training programs should be based on careful analysis on classroom pedagogical issues using process analysis (see Chapter VIII for a further discussion of monitoring school processes). This could include, for example, teaching teachers how to use new textbooks and learning materials, teaching them specifically how to manage multi-grade classes, and observation of successful audience-specific individualized instruction that encourages them to replace the expository methods of teaching with more flexible approaches. The cost of a one week, yearly hands-on training session for teachers can be roughly calculated. A teacher's weekly salary is US\$80 (assuming a US\$ 4000 annual salary) or 2% of annual student cost (calculated by dividing US\$80/US\$4000). Then the cost of a one week course is roughly US\$80, plus additional amounts for travel and per-diem. A one week teacher training program therefore would be highly cost effective if in fact it changed teacher behavior yet highly wasteful if it did not.

An example of a very wasteful program has been Venezuela's decision to encourage all primary school teachers to get a higher education degree and to give them salary increments of 50% upon receiving this degree. The result has been a vast expansion of in-service and distance education programs (costing \$500 per year per in-service student, each of whom is probably taking five years to get degree equivalency) but no discernible reduction in repetition rates or increase in learning.

Box 6.3: Escuela Nueva: An Effective National Program for Improving Rural Schools

Escuela Nueva is an innovative educational program officially launched in 1976, after building upon a decade of experimentation of the Unitary School Program which aims at universalizing access and improving school quality in rural areas. Although initially implemented on a small scale up to 1976, between that year and 1987, the program grew from approximately 500 to 9,000 multi-grade schools.

Escuela Nueva introduced a program with the following objectives: (a) to provide the complete primary education cycle; (b) to improve the relevance and quality of education; (c) to improve student achievement and self esteem; (d) to improve educational efficiency and productivity; (e) to initiate democratic processes within the classroom, through active and participatory methodologies; and (f) to integrate the school and the community.

The strategies for reaching these objectives focus on curriculum, teacher training, administration, and the relationship between the school and the community. The content of the curriculum, which can be readily adapted to the circumstances of a particular community, is simple and sequential, with an emphasis on problem-solving skills. Presented as semi-programmed learning guides, the curriculum permits a flexible promotion system. To complement the curricular materials and to meet the challenges of multigrade teaching techniques, *Escuela Nueva* has developed a special classroom design featuring resource corners, simple furniture, a library with books, and a school government.

Escuela nueva places special emphasis on a teacher training strategy that is based on four concrete aspects:

- (a) A critical first step is that teachers must see demonstrative schools implementing *escuela nueva* methodology;
- (b) Training consists of learning how to implement the Program;
- (c) Training introduces a sequential process of gradual introduction of innovations through three in-service basic workshops and through a network of periodic local meetings of teachers called multi-centers where they exchange experiences, innovations and solutions to problems;
- (d) workshops are organized using a teachers' training manual designed in such a way that makes training easily replicable.

An initial 8-day workshop introduces teachers to the Program's philosophy and content, teaching strategies, school organization and community involvement.

Two other workshops during the year permit teachers to learn the correct use of children's materials, how to apply student evaluation and flexible promotion systems, and how to apply curricular materials to the needs of students and characteristics of the community. Supervisors undergo similar training with greater emphasis on pedagogical aspects of supervision.

Several evaluations of the program indicate gains in self-esteem, greater learning achievement in mathematics and Spanish and more socio-civic behavior when compared to traditional schools. Therefore it appears that the *escuela nueva* methodology matches the advantages to be had at schools with a staff member for each grade. Approximately 89% of teachers believe that the *escuela nueva* method is superior to other traditional rural schools.

Key factors that helped institutionalize the program during its expansion were: (a) support by local and regional administrators and teaching staff; (b) the fact that the program is automatically "built-in" to the school, or that it doesn't stand-out from other school routines; (c) a strong role definition; and (d) clear communication between school officials and parents-community.

Other factors that helped ensure success were: an ability to house the program in national and regional Ministry offices that supported the program and could help finance its development; national coordination by a stable and experienced team that had "hands-on" experience from the start of the program; building of commitment among national and local officials; the incremental expansion through involving schools little by little when the interests and resources were available; and financial support from the donor community.

Expansion of the *Escuela Nueva* to about 10,000 schools in 1989 was highly successful. It passed the test of a large-scale implementation and evaluations confirmed the effectiveness of the model. The New School unit costs have been estimated to be just 5% to 10% higher than the unit costs in traditional schools. However management problems have arisen during its massive expansion.

Because of the lack of coordination between different units within the Minister of Education, specially between the unit designed to expand the program with financing from the World Bank and the national team responsible for designing policies and implementing the program at a National scale four implementation problems have appeared. First, there have been logistical problems such as lack of coordination of training materials and training seminars and materials are not being distributed timely nor adequately. Second, training is not responding to the technical parameters of the Program. Third, more emphasis and resources have been dedicated to the infrastructure of schools than to the software components. Fourth, within the new decentralized scenario of the country, recently elected majors have transferred many trained teachers of the Program and unqualified and inexperienced teacher have been appointed.

The lesson from recent experience is that if the *Escuela Nueva* Program is to continue to function effectively on a national scale as it was demonstrated up to 1989, it will require a renewed commitment from the top towards its fundamental pedagogical and learning practices.

Lockheed and Veraspoor, 1991; Colbert de Arboleda 1987; Rojas and Castillo, 1988; and Rojas and Martinez, 1993.

The *escuela nueva* model is an example of a successful cost-effective in-service teacher training program. The fundamental elements of this program included well developed teaching/learning materials (which carry a large portion of the teaching process), community and student participation, and a highly structured month long training program. The *escuela nueva* increased recurrent unit costs in Colombia by about 10% to cover training and textbooks and increased learning by one third compared to traditional schools (Schiefelbein, 1991). Box 6.2 summarizes the experience of the *escuela nueva*.

Changing Teacher Attitudes and Morale. Some of the more successful schooling experiments focus as much on morale and attitude as on modern pedagogy. Morale in the public system can be improved through a combination of increased school level control and autonomy, monetary and non-monetary rewards for excellence, and a reduction in distractions such as strikes and management disputes. One possibility would be to establish government/teacher union pacts, in which it is agreed that salary disputes will not be resolved by strikes (e.g., binding arbitration); as well as to link pay increases with increased real teaching and preparation time. Teacher's statutes will need to be designed to reward training and excellence to the extent

possible (e.g., include symbolic rewards, recognition and honors for excellence as identified by peers). Continuous central support and recognition can be provided through professional teachers conferences, professional journals, "how-to" journals, simple teachers' guides, and group workshops.

The *Fé y Alegría* program is an example of a program which uses many public school teachers but which has succeeded in changing their attitudes, with improvements in student learning and at a lower cost than public schools. Box 6.3 summarizes their experience.

Managing Innovations. Successful implementation of innovations requires meeting five criteria: (a) define a model and then revise it based on classroom experience and teachers' opinions; (b) develop locally and start small, with support from local concerned actors and voluntary participation; (c) ensure continuity at local and central levels by keeping administrators and political parties informed and committed; (d) get consensus among all the actors and secure adequate financing; (e) keep it simple and do not change the successful elements of the model; and (f) introduce needed changes based on systematic monitoring. The *escuela nueva* met these criteria until some 10,000 schools were successfully operating; it is certainly the most successful school innovation in LAC. Recently it has begun to face difficulties because it has lost continuity, diluted the training program, focused on the physical side rather than on the learning processes, lost its high national profile, and become compulsory. To continue to function effectively, *escuela nueva* requires a renewed commitment from the top towards its fundamental pedagogical and learning objectives.

Pilot projects fail if they are expanded too rapidly and lack continuous support from the top. The *ciclo basico* program in Sao Paulo/Minas Gerais is an example of an innovation that never had a chance. The approach of automatic promotion from grades one to two is pedagogically sound if accompanied by adequate training and provision of materials. In principle it assumes in-service training to encourage teachers to adapt more modern pedagogy, continual student evaluation during the first two grades in order to target special assistance to slow learners, and an enriched environment of learning materials. However the program expanded rapidly to the entire state of Sao Paulo after one year of pilot testing. In-service teacher training consisted of only a few days of training and several video cassettes, and the educational materials were never provided. The new secretary of education had no interest in the program since he had identified a new set of innovations. A similar experience occurred in Minas Gerais. A review of flow rates in both states has shown that repetition rates have indeed gone down in grade one but repetition has increased significantly in second and third grade and there has been no significant increase in retention of students through fourth grade. The evaluation shows, not that the *ciclo basico* is a failure, but rather that it has never been implemented in accordance with the initial concept (See Costa Ribeiro and Klein, 1993; and Davis and Neubauer da Silva, forthcoming).

Box 6.4: Fé y Alegria: An Effective Non-Elite Private School Network

Fé y Alegria is a Catholic school network founded in 1935 in Venezuela by a Jesuit priest with the help of university students. In its beginning, it worked exclusively in the marginal neighborhoods of Caracas, then spread to other regions of the countries and later to ten other Latin American and Caribbean countries: Guatemala, El Salvador, Nicaragua, Panama, Colombia, Bolivia, Dominican Republic, Paraguay, Brazil, and Peru.

Fé y Alegria is a good example of a cost-effective and non-elitist private school system that along with other similar types of schools, merits increased public financial support. In Venezuela it tends to 41,208 students, approximately one percent of total primary school enrollment, of which all are in low-income areas. Nearly 70% of the schools are run by religious congregations or community groups and the rest by public administrators.

A recent longitudinal study of six graders shows higher repetition rates and lower drop out rates for Fé y Alegria schools vis-à-vis matched neighboring public schools: in Fé y Alegria 26% of students repeat compared to 24% in municipal schools and 16% in national public schools. These higher repetition rates in Fé y Alegria may be reflective of higher academic standards. With regard to drop-outs, in Fé y Alegria only 33% of students leave school early compared to 38% for Municipal schools and 37% for national schools. An evaluation test in reading comprehension and mathematics shows that reading scores of Fé y Alegria students are significantly higher than matched municipal and national public schools, while mathematics scores are slightly below that of the other schools.

The average cost per student in Fé y Alegria is 62% of the costs of public schools of this difference about 15% is in the areas of maintenance and personnel, given the presence of in residence nuns and other religious personnel which help upkeep the schools. This means that the average cost per student in Fé y Alegria is 23% lower than in public schools, because of cost savings from a smaller administrative bureaucracy. Funds for Fé y Alegria come from the Ministry of Education which allocates a lump sum for all the schools, plus small private fees and an annual lottery.

The main components of the Fé y Alegria program include a curriculum sensitive to local needs and realities, a clear mission for the school based on Christian and social values, a working relation between directors and teachers aimed at improving quality, continuous in-service teacher training, a close relationship with the community, availability and use of libraries and other learning materials, and extra-curricular activities. The underlying force that drives the school is their strong belief in Catholic principles which help foster teachers that are motivated and that view their role not only as teachers but social and community agents. This type of commitment is responsible for the schools' close adherence to the official 180 day school year compared to an average of 150 in public schools due to strikes, poor working conditions, or lack of supervision.

An effective administrative element of Fé y Alegria schools involves decentralized administration of the schools including budget decisions. This not only cuts down administrative costs but also derives in a more efficient use of resources destined towards textbooks, learning materials, seminars for teachers and extra-curricular activities for the students.

M. Herrera, 1993.

Using Technology to Change Teacher Behavior. Teacher classroom behavior can be changed through utilizing interactive radio (IR) and computer assisted instruction (CAI) which carry a large part of the instructional burden while at the same time acting as effective in-service training programs changing teacher behavior. In particular IR has been shown to be cost effective in Honduras, Costa Rica, Bolivia, and Nicaragua and will shortly be introduced to Venezuela in a proposed World Bank financed project.

Increasing Time on Task. Depending on the strategies, increased time on task may be very expensive or nearly cost-less. The cheapest alternative would be simply to enforce adequately the current regulations on the length of the school year and the school day and on teacher absenteeism. Another alternative would be to change teaching strategies within the classroom to increase effective learning. This would require self-learning modules for students or a program of pre-and in-service training. The most expensive alternative, to pay teachers for the additional required official school day or school year, would only be a cost-effective approach if it were accompanied by more stringent administrative control procedures. Additional homework would have a minimal cost. A number of Latin American countries have been seriously considering or actually implementing increases in the official length of the school year as well as the length of the school day.

It is possible to introduce some additional elements to the traditional input mix that may increase time on task. For example, commercial TV can be used for educational purposes through encouraging teachers to use programs for educational purposes as well as through providing samples of questions to be answered (or instructions to be followed) by students.

In many countries strikes have resulted in the greatest loss of teaching time and have had little impact on salary levels. A long term agreement on salary increments linked to a longer school year could provide more stability. This could also include full makeup of all lost days as well as salary penalties to teachers participating in the strikes. Furthermore, better monitoring of teacher attendance, including some form of enforcement, could reduce widespread absenteeism and late arrival or early departure.

Research on the impact of time on task could be undertaken to inform the public on key issues. For example, a time series on teachers' salaries would probably show that strikes have little or no impact on salary increments. Public opinion must also be informed about the long-term effects of salaries. Even though there is no evidence that short-term salary increases result in better teaching (Harbison and Hanushek, 1992), long-term effects in attracting better candidates may be very important. A national consensus on teachers salaries must be worked out from a non-partisan political point of view.

Reducing Classroom Heterogeneity. LAC Governments should reduce classroom heterogeneity by enforcing regulations on the age of entry into first grade, as has been done by Argentina and Mexico. It would also be appropriate for all LAC countries to review their policies with regard to learning disabled and handicapped children and to devise reasonable cost alternatives to meeting their needs in regular or special classrooms.

Lowering Student Teacher Ratios: A Quality Improvement? As noted above, most research to date shows that marginal decreases in student teacher ratios do not result in increased learning. In LAC countries low student teacher ratios do not seem to be associated with retention in school. The main theoretical explanation for this lack of a relationship is that teachers' classroom behavior does not change with lower student/teacher ratios. On the other hand, the use of modern pedagogical approaches, including group learning and individualized instruction, requires a high level of classroom management and organization which may well be difficult with classes above 30. Furthermore larger classes in any circumstance do put more demands on teachers for marking tests and keeping track of children.

The conclusion from this is that LAC countries should not reduce student teacher ratios through inadvertence or simply to hire more teachers, especially at the cost of providing educational material. Rather, reducing student/teacher ratios could be undertaken if it were part of specific program designed to change teachers' classroom behavior and only if a large number of classes were above 30. If such a program is not undertaken, then it would be better to increase student teacher ratios marginally and use the resulting savings for educational materials, or at the least to enforce current regulations to ensure that these ratios do not go down. It should be noted that twelve out of the eighteen LAC countries surveyed already have average student teacher ratios of 30 or less. and therefore, could well afford marginal increases in student teacher ratios without compromising the use of modern pedagogical practices.

Conclusions

- The new teaching strategies which need to be established include audience-specific instruction, with an increased emphasis on small group instruction, multi-grade teaching, new strategies for teaching reading, bilingual education, and flexible promotion.
- Several programs in LAC, including *escuela nueva* and *Fé y Alegría* have achieved significant improvements in learning. These programs were based on strong management support and an integration of in-service training and educational materials and on motivational strategies. Other countries can replicate and/or adapt these approaches.
- Several countries (Columbia, Chile, Uruguay, Jamaica) have successfully reduced repetition without adversely affecting learning. These programs depended on strong central support and continuity; other countries can successfully replicate and/or adapt these programs.
- A variety of strategies can be adapted to increase time on task, to improve teacher morale, and reduce classroom heterogeneity.
- Improvements in pre-service training should focus on selecting motivated and more competent students, and on active learning of student/teachers. In-service training should consist of highly targeted hands-on programs designed to change specific classroom behaviors, linked with provision of educational materials, and based on systematic observations of typical classroom practices.

VII

The Financing of Primary Education

A. Issues and Trends

Compared to other developing regions, Latin America spends a similar share of GNP on education, but a much smaller share of it on primary education. For example, Latin America's expenditure on education expressed as a percentage of its GNP is approximately equal to the Asian "Newly Industrializing Countries" (NICs), yet when differentiated by level, only 1.1% of its GNP goes towards primary education compared to an average of 1.5% in the NICs. Contrasted to Industrialized Countries (ICs) which spend 1.8% of GNP on primary education and significantly more on education as a whole, Latin America lags behind by an even larger margin (Yang, 1991; and UNESCO, 1992). Unit costs in primary education in LAC are about 6% of GNP per capita. This compares with 10% in Korea, 14% in Malaysia, 15% in Thailand, 13% in Indonesia, and 6% only in China, Bangladesh, India, and Sri Lanka (Tan and Mingat 1992, p. 188).

Expenditure per Student

In 1989, LAC countries on average spent US\$118 annually per primary student.²⁰ The ratio of average annual primary unit cost to annual GDP per Capita was 0.07, although there was wide variation. Annex Table 13 shows the ratio of primary unit spending to GDP per Capita.

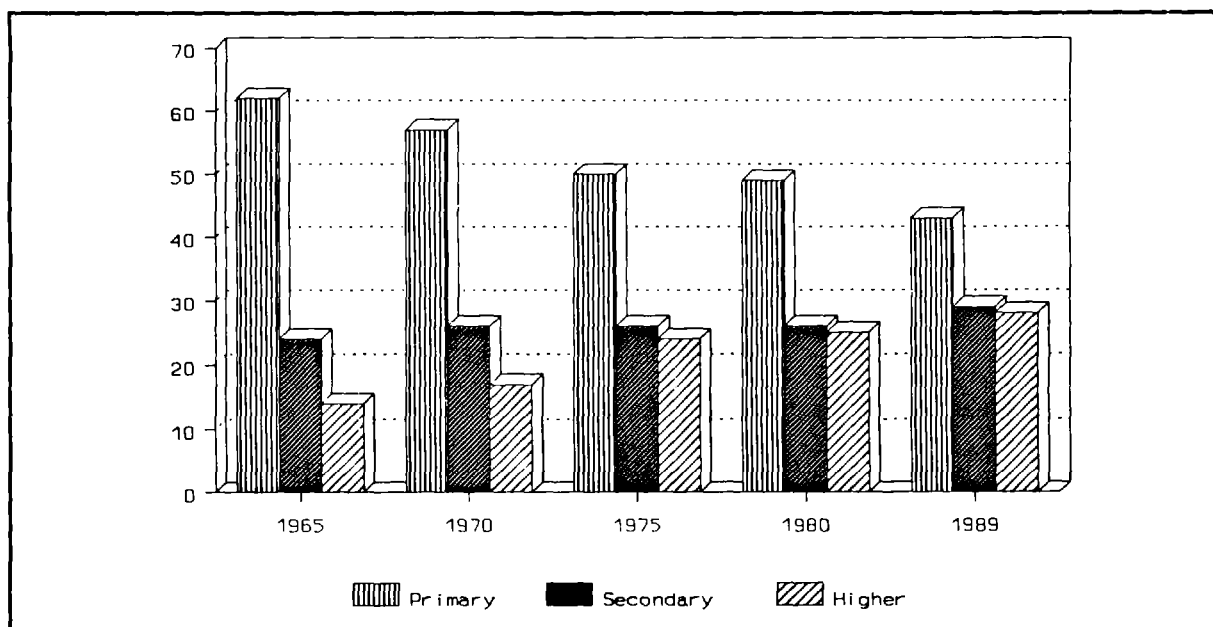
There was a drop in expenditure per student from US\$164 in 1980 to US\$118 in 1989. The countries that underwent the largest reductions were Uruguay (US\$310), El Salvador (US\$112), and Mexico (US\$107). Only Chile showed a significant increase (US\$52) during this period.

²⁰ Figures given in 1990 constant US\$ Dollars.

Primary Education Spending as a Percentage of Total Education Spending

As shown in Figure 7.1, the share of total education spending in LAC devoted to primary education declined from 49% to 43% between 1980 and 1989, while the share of higher education increased from 25% to 29%. This continues a long-term trend which began as early as 1965. The share of the education budget devoted to primary education varied significantly among countries, ranging from 22% in Mexico to 66% in Bolivia (Annex Table 14). This variation is partly a result of differing definitions of the length of primary school, which range from six to nine years. Between 1980 and 1989, during the economic crisis, the percentage of education spending devoted to primary education decreased in nine countries--Argentina, Colombia, Haiti, Honduras, Jamaica, Mexico, Panama, Peru and Uruguay--and increased in Brazil, Chile, Costa Rica, Dominican Republic, Ecuador, and Venezuela.

Figure 7.1: Spending by Level of Education as a Percentage of Total Education Spending, 1965-1989



Student/Teacher Ratios and Teacher Working Conditions

There has been a steady reduction in student/teacher ratios in LAC from 32:1 in 1980 to 29:1 in 1989 (see Table 6.1 and Figure 6.2). This reduction has taken place in a time of decreased government financing, when the share of spending on primary vis-à-vis the other sub-sectors declined along with expenditures per student. This means that LAC countries are hiring more teachers but paying them less money.

The reduction of student/teacher ratios has been motivated by a combination of two factors: (a) the belief that smaller classes are better; and (b) pressures for increased public sector hiring during a period of economic downturn. In addition some countries may have been slow to close down teacher training schools as demand for new teachers has gone down. This trend may well have diverted resources away from other inputs such as books and didactic materials. The research evidence is strong that, while low student/teacher ratios or class size may significantly affect the classroom environment, pupil's attitudes, and teacher's morale (Smith and Glass, 1979; and Hanushek, 1981), they appear to have little effect on student learning (Velez, et. al., 1993). Investments in software such as textbooks and teaching/learning materials have greater benefits in terms of learning than reducing student/teacher ratios.

Notwithstanding the research on marginal investments in primary education, teachers are the fundamental input into education and by far the costliest. The question to be asked is whether teachers are adequately paid when compared with similar professions and what have been the trends over time.

A number of studies have addressed this question in LAC. Psacharopoulos (1987), using 1980 data, found that primary school teachers in Brazil were underpaid relative to workers in similar or less prestigious professions. Rabelo Ferreira (1991) found that first grade teachers in Brazil had salaries lower than those of professionals with less training and almost a third less than those with equal training. Large income disparities among teachers were also found between geographical regions favoring the southeast and urban areas at the expense of more rural zones. Harbison and Hanushek (1992) found that federal, state and private school teachers in Brazil were much better paid than municipal school teachers. They also noted that wages in all schools were very low when measured as a proportion of the minimum wage and showed signs of decreasing significantly between 1981 and 1985.

Corvalan (1990), reviewing time series data for five countries (Argentina, Bolivia, Colombia, Costa Rica and Guatemala) for the period 1980-1987, showed that, with the exception of Colombia, teachers' salaries had gone down for all teaching levels. In Argentina and Costa Rica salaries declined almost by half in real terms during this period. An ILO (1990) study, comparing teachers' incomes with those of other occupations for 1982 and 1985 in seven Latin American cities--Bogota, Buenos Aires, Caracas, Mexico, Panama, Rio de Janeiro and Sao

Paulo--found that teachers earn more than workers holding less training (i.e., construction workers, and textile workers) except in the case of bus drivers, yet clearly earn much less than workers holding an equal amount of training (i.e., electrical engineer, bank cashier and executive secretary).

Psacharopoulos, et al., (1993), using household survey information, showed that primary teachers' salaries were, on average, equivalent to 90% of that earned by a comparator group consisting of the average labor force worker (excluding self-employed workers, employers, workers who live in rural areas, agricultural workers, administrators, domestic servants, and workers under the age of 15). However, when years of schooling and hours worked per week are controlled, there was no clear evidence of over or underpayment. Table 7.1 below provides comparative data for eight countries. A comparison between primary teachers in urban and rural areas reveals that, with the exception of Costa Rica, urban teachers are paid more than rural teachers. In Brazil teachers' salaries appear to have deteriorated over time compared with others, while in Panama they have improved. No other time series were available in this set of data.

Table 7.1: Primary Teacher's Salaries vis-à-vis Comparison Group and Urban-Rural Differentials in Seven LAC Countries

Country	Teachers/Comparator Group Earnings Ratio		Primary Teachers Pay Differentials by Urban-Rural Location	
	1980	1989	1980	1989
Bolivia	...	0.65	...	...
Brazil	0.68	0.52	0.38	0.34
Costa Rica	...	1.24	...	1.05
Ecuador	...	0.99	...	...
Honduras	...	1.20	...	0.93
Panama	0.82	0.92	0.76	0.93
Uruguay	...	0.76	...	...
Average	0.75	0.90	0.57	0.81

Source: Psacharopoulos, G., J. Valenzuela, and M. Arends. "Teacher's Salaries in Latin America: A Comparative Analysis." Policy Research Working Papers No. 1086, The World Bank.

The fact that teachers work less than the average labor force member may be exaggerated by the fact that the LAC school day and school year are much shorter than in other regions (Schiefelbein, 1992). Shorter working hours, however attractive a feature to people in the teaching profession, at the same time justify the lower pay that follows. Many rural and urban

marginal areas lack trained teachers. While hard information is not available, apparently the economic benefits and incentives package is inadequate to attract and keep teachers in many rural areas, since these are usually the areas with the most untrained teachers.

It is possible to estimate teacher's salaries by multiplying the student teacher ratio by unit costs, and by assuming that 95% of primary education costs go to salaries. However, such estimates should be considered indicative only because of uncertainties with regard to the parameters, including exchange rates. Estimates of teachers salaries based on these estimates show that salaries have gone down in all countries surveyed except Chile (See Annex Table 15).

Expenditure on Books and Learning Materials

Financing of textbooks and instructional materials in Latin America is highly inadequate (Carlson, 1993). As noted earlier, in the three countries for which we have information, only about 1% of education spending goes towards these learning materials.

**Table 7.2: Public Financing of Educational Materials
for Mexico, Costa Rica and Venezuela, 1989 (in 1990 US\$ constant)**

	MEXICO	COSTA RICA	VENEZUELA
Primary Unit Costs	\$114	\$181	\$213
Primary Unit Spending on Educational Materials	\$4.50	\$3.93	\$1.50
Educational Materials Expenditures as a Percentage of Primary Spending	4%	2%	<1%
Educational Materials Expenditures as a Percentage of Education Budget	1%	<1%	<1%

Source: Basic Education in Mexico (World Bank, Report No. 8930-ME); Costa Rica Basic Education Rehabilitation Project SAR (World Bank, Report No. 9893-CR); Venezuela 2000: Education for Growth and Social Equity (World Bank, Report No. 11130-VE). Table cited in Carlson, *ibid.*

As noted in Chapter V, among the seven Andean countries parental financing is greatest in Bolivia and Peru. Only Chile and Colombia finance more than 50% of the costs of textbooks with public funding.

Implications of Enrollment Growth

Growth rates of the 6 to 11 age cohort in LAC are decreasing from an average of 1.5% growth per year in the 1980-1990 period to 1.0% for the 1990-2000 period. There will be considerable variation across countries which will be reflected in continued high growth in some countries. Enrollment rates in the region are approximately 100% (gross), and range from 134% in Venezuela to 59% in Haiti. Enrollment rates of over 100% indicate high repetition rates, which financially imply a high cost to governments in the form of "excess" capacity. Enrollment rates have increased largely due to the government's focus on achieving universal access, but also because the private sector began to play a significant role in providing primary education. Private school enrollments increased slightly from 14% in 1980 to 15% in 1989. Table 7.3 shows demographic growth rates, enrollment rates and private school enrollment for 1980 and 1989.

Table 7.3: Demographic Growth Rates of Population Aged 6-11 and Gross Enrollment (in percent)

	Demographic Growth Rate			Gross Enrollment			Private School Enrollment		
	80-90	90-'00	Change	80	89	Change	80	89	Change
Argentina	2.0	-0.4	-2.4	106	112	6	19	19	0
Bolivia	3.0	2.0	-1.0	84	89	5	...	16	...
Brazil	1.8	0.9	-0.9	99	101	2	13	12	-1
Chile	0.3	0.3	0.0	112	98	-14	20	38	18
Colombia	0.9	-0.5	-1.4	128	108	-20	14	15	1
Costa Rica	1.7	0.7	-1.0	105	101	-4	3	6	3
Dominican Rep.	1.0	1.4	0.4	118	...	...	18	20	2
Ecuador	1.9	1.8	-0.1	113	113	0	16	17	1
El Salvador	1.3	0.8	-0.5	75	78	3	7	11	4
Guatemala	3.1	2.1	-1.0	71	78	7	14	14	0
Haiti	2.7	2.0	-0.7	74	59	-15	57	43	-14
Honduras	2.6	2.3	-0.3	93	107	14	5	7	2
Jamaica	-1.5	0.3	1.8	101	98	-3	4	4	0
Mexico	0.1	0.7	0.6	115	110	-5	5	6	1
Panama	0.4	0.5	0.1	106	107	1	6	8	2
Paraguay	2.7	3.2	0.5	104	105	1	...	15	...
Peru	1.5	1.2	-0.3	114	118	4	13	12	-1
Uruguay	0.1	-0.7	-0.8	106	106	0	16	16	0
Venezuela	2.2	1.1	-1.1	109	134	25	11	13	2
Average	1.5	1.0	-0.5	102	101	0	14	15	1

Note: Averages are un-weighted.

Source: United Nations (1988), UN Population Estimates and Projections; World Bank Data; UNESCO - OREALC Data.

With the exception of Bolivia, El Salvador, Guatemala and Haiti, LAC has achieved universal enrollment for at least the first grade level. At the same time the burden of demographic growth in the primary cohort in the year 2000 will still be high (over 2%) in Paraguay, Honduras, Guatemala, Haiti, and Bolivia. Except for these countries, which will have significant future growth in this age cohort, the financial burden of further expansion will lessen due to a stabilization of the primary school aged population in most countries. However, this is likely to occur concurrently with demographic shifts in regions (rural to urban) and neighborhoods (urban centers to urban peripheries) resulting in demand for new schools. Nevertheless, except for the countries listed above, the demographic burden will be lessened. Provided the demands of the higher levels of education are not excessive, this will provide an opportunity to invest in quality.

Conclusions

The conclusions of this review of the financing of primary education are the following:

- Compared to its Asian rivals, Latin America may be under-investing in primary education.
- During the period of economic stringency of the 1980's primary education suffered in terms of the real amounts of funding going to the sub-sector. With the exception of Chile, in every country unit costs decreased significantly.
- In most of the countries surveyed, public funding of textbooks and teaching material has declined significantly.
- In comparison, over the same period higher education significantly increased its share of the education budget, and, in at least some cases, appears to have been protected from the recession. Because of increased enrollments, unit costs in higher education reportedly have also gone down in nearly all countries.
- Teachers salaries have declined but there is inadequate evidence to determine whether teachers are worse off relative to comparable occupations than in 1980.
- Student teacher ratios have declined in every country except Chile. This implies a decrease in teacher salary at the same time that the workload is being decreased. Based on most research this will not result in increased learning.
- The demographic transition in LAC means that the burden of dependency is decreasing. Most LAC countries, with the exceptions of Nicaragua, Guatemala, Honduras, Paraguay and Haiti, will not face major increases in enrollment. Since quantitative deficits will be less pressing, it may be possible to focus on qualitative issues.

B. Strategies for Reform

There are three elements to a strategy for primary education financing: (a) to agree on its importance and to protect the sub-sector from economic downturns; (b) to focus on the key areas for quality improvement; and (c) to improve financial management.

Primary Education as a Financing Priority

An appropriate approach to public financing of primary education would be to agree that support for primary education is of the highest importance and therefore primary education will be protected to the extent possible from economic and financial downturns. In turn this approach suggests that other areas are not of highest priority and that private sources of funding will be sought when public funds are inadequate to satisfy all social needs and demands. Only a few countries, including Chile and possibly Mexico, are currently following this policy.

Financing Priorities within Primary Education

The second element of this approach is to focus, within the primary education sub-sector, on the elements which have been demonstrated to be fundamental to quality improvement. This means focusing on children's needs and on the learning environment, rather than on bureaucratic or other intermediary clients. This would include the following:

- *Financing of Textbooks:* Financing of textbooks and teaching materials should be increased from the current average of less than \$2 per student to at least \$5 per student. At the same time parents should be asked to contribute to the costs of teaching materials, mainly as a means of ensuring a sense of ownership and responsibility as well as a way of helping to ensure school based funding.
- *Pre-School Financing:* Public financing of pre-schooling should eventually cover 100% of poor and at risk children, but governments should seek lowest cost solutions. Low cost solutions normally mean support of private and community based pre-schooling and early child development, which invariably have lower capital costs, usually have lower recurrent costs, and may well be more effective. Furthermore, it means that pre-schooling should start with the most deprived children in the urban and rural slums. Cost sharing even in most deprived areas should be encouraged. Governments should resist middle class request for public support of pre-schooling.
- *Teachers Salaries:* Governments should take efforts to ensure that real teacher salaries do not further deteriorate, consonant with overall country economic situation. However, any increases in teacher salaries should be accompanied by steps to strengthen the teaching/learning process. In particular, salary increases could be accompanied by agreements to increase the length of the school day to up to five hours as well as by steps to ensure that the actual of days in the school year is at least 180. Teachers' statutes

should include rewards for excellence and incentives for trained teachers to work in rural areas.

- **Targeting:** Better quality of education is specially required for deprived students who generally have repetition rates twice as high as the national averages. Improvements in materials and teachers should be targeted to these students, who are located in the most deprived regions: rural areas, indigenous groups, and urban marginal poor. Targeting is important because the difference between achievement levels of deprived and wealthy students in Latin American countries is usually much larger than the difference between wealthy students in Latin American countries and in developed countries. Therefore, any strategies for changes in inputs and processes should be designed to deal with socio-economically deprived children who are generally in public schools serving urban-marginal and rural children. Box 7.1 gives examples of targeting from two education programs in Chile.
- **Statistics, Research and Assessment:** Another key area for support is that of research, information gathering, and support of pilot innovative programs. Governments should allocate an adequate percentage of the primary education budget to these elements. The majority of these funds should go to non-profit research groups operating outside government, and a significant portion should be to training. As noted above it is essential to set national priorities for research and to rigorously review the quality of such research so as to ensure its cost effectiveness.

Improving Financial Management

The third element of this approach is to manage existing funds more efficiently. Currently, administration costs are often high; at the same time systems of supervision and control are ineffective. The result is that many resources are wasted. More efficient use of existing resources could free up funds to improve primary education quality.

Problems in Educational Administration. The ratio of educational administrators to teachers often exceeds the standard of one administrator per eight teachers found in efficiently managed systems; in Venezuela, for example, this ratio has been calculated as one administrator per two teachers. High ratios of educational personnel to students can result from inefficient administration or from faulty employment statistics. Some countries, for example, suffer from the problem of ghost workers--administrators and teachers on the public payroll who fail to work--which results from the practice by which politicians reward their supporters with government appointments. In Northeast Brazil, where this form of clientelism has been especially common, there is one education employee per every six to seven students, compared to a ratio of one to twenty in several LAC countries. In addition to the problem of bloated administration and ghost workers is the high absenteeism rate found among school teachers, especially in rural areas.

Box 7.1: Two Examples of Targeting of Financial Resources from Chile

The 900 Schools Program and the Pedagogical Decentralization Program in Chile are good examples of programs which direct financial, human, and material resources towards at-risk population.

The 900 Schools Program began in 1990 with grants from the Swedish and Danish governments. Its main objective is improve the quality of schooling and learning in the country's poorest schools. In 1990, the program reached 969 schools, and in 1991 it was increased to 1,376 schools. The program has reached 222,491 students (20% of primary education students) and approximately 7,267 teachers with activities ranging from school rehabilitation, provision of didactic materials (games) and class libraries, workbooks, textbooks, learning modules for students and pedagogical modules for teachers. The criteria for selecting these schools were based on (a) low student achievement based on data from the Sistema de Medición de Calidad de la Educación (SIMCE) and other educational indicators provided by departmental offices of the Ministry; (b) low socio-economic status of the students as recorded by the schools; and (c) size and accessibility of the schools (the smallest and more distant were excluded the first year but incorporated on an experimental basis in 1991).

The Pedagogical Decentralization Program (PME) forms part of the larger Primary Education Improvement Project which is partly financed with a World Bank loan and managed by the Ministry of Education. It was established in 1992 to foster local initiatives aimed at improving school quality. Grants of US\$ 6,000 will be awarded to 5,000 schools over a five year period for projects such as reinforcing instruction in Spanish, mathematics, natural and social sciences; organizing handicraft activities and school fairs; restructuring school curricula; creating school orchards and gardens, and; establishing new pedagogical models and implementing pedagogical workshops.

Six weighted criteria were used to classify the schools into high, medium, and low risk categories: (a) available time series of achievement scores; (b) a scale that incorporates the number of primary education grades offered; (c) dropout and repetition rates; (d) degree of rurality; (e) school enrollment; and (f) socioeconomic status of student population. Primary schools were classified as high risk if they: (a) scored low on achievement tests in the few years prior to implementation; (b) had high repetition and dropout rates; and (c) were located in low-income urban or rural areas (i.e. areas with 300 or fewer inhabitants, or 60 or fewer dispersed households). Grants will be assigned on a competitive basis within each category of school. It is expected that eventually all of the high risk schools will receive grants; about 47% of the medium risk schools and 25% of the low risk schools will receive grants.

C. Cardemil and M. Latorre, 1992; World Bank, 1991.

Efficiency in educational management requires effective systems of personnel and financial management and school and teacher supervision. Weak personnel management systems permit the "hiding" of ghost workers in public education budgets. Financial management systems which fail to budget and account for expenditures by program categories make it difficult to identify programs with excessively high costs. Inadequate systems of asset management facilitate unauthorized removal of property from school buildings and encourage the deterioration of physical infrastructure by failing to identify problems and schedule regular maintenance. The failure to provide adequate school supervision permits teachers to be absent without suffering financial penalties.

The trend of lowering student teacher ratios is to some extent, a result of poor management, since in many countries it is a result of inertia (e.g., excessive output of teacher training colleges, political pressures for hiring) rather than an explicit policy.

The strengthening of the management of educational systems requires the introduction of program budgeting and accounting and continuing investments in computerized information systems and management training. In making such changes, education administrators are often constrained by the public budget and personnel laws of the general government. These constraints, as well as resource constraints, have encouraged some countries in the Region to consider more radical reforms to improve administrative efficiency and accountability.

Decentralization. One such reform is the decentralization of much administrative decision-making to the local municipality. The empowerment of local citizens is viewed as one means to strengthen the monitoring of schools and, thus, provide incentives for improved performance and efficiency. Brazil and Chile have decentralized primary education in this way, and Colombia is now initiating a similar effort. Evidence from Mexico and El Salvador shows that giving the community the authority to monitor and reward or penalize teachers significantly reduces teacher absenteeism in rural areas.

Private Sector Service Delivery. Another reform is the contracting for the delivery of educational services directly with community groups or non-profit organizations. In some cases, this entails grants to communities to construct schools on a cost-sharing business; this is the approach of some of the states in Mexico, for example. In other cases, contracting has taken the form of vouchers, which parents may use to enroll their children in the public or non-profit school of their choice. This particular reform gives parents a uniquely strong role in monitoring school performance and providing incentives to schools to improve performance in order to attract students. While vouchers offer the potential for improvements in administrative efficiency, Chile's decade-long experience with vouchers does not yet provide strong evidence to this effect (see Winkler and Rounds, 1993).

Raising Student Teacher Ratios. Good management suggests that, at least until funds for teaching materials and other fundamental inputs are ensured, that teacher student ratios should be held constant or slightly increased in most countries. An increase in student/teacher ratios from 27 to 30 would result in a savings of 11%. An increase in student teacher ratios from, say 27:1 to 28:1, would result in a savings of 3.7% in the recurrent budget.²¹

Avoiding High Cost/Low Payoff Interventions. Good management also requires examining educational strategies in terms of their cost effectiveness and avoiding high cost, low payoff interventions. The high cost, low effectiveness strategies which should be avoided

²¹ Even though research findings suggest that class size has no impact on students' achievement when taught traditionally, classes of less than 30 students may well be desirable in multi-grade and in personalized teaching. This means that, as teachers begin to implement effective techniques such as mastery learning or cooperative instruction, student teacher ratios may well need to decline.

include (in addition to reducing student teacher ratios without changing pedagogical approaches) increasing the length of pre-service training programs, supporting large-scale, theoretical and un-focussed in-service training, and providing school lunches to all children regardless of need. Some reforms may have significant effects on learning but cost very little. These could include, for example, enforcing on-time entrance into first grade, enforcing regulations on the length of the school day and school year, selecting more motivated teachers, and assigning the best teachers to first grade, urban slums, and rural areas.

Profiting from the Financial Implications of the Demographic Transition. The demographic transition which all LAC countries are currently undergoing means that over the next 10-20 years, with the exception of a few countries such as Haiti and Nicaragua, the burden of dependency will decrease as the growth in the number of children goes down. This, as well as renewed economic growth, will give educational managers some leeway to allocate funds within the primary sector, since quantitative demands will diminish. It is therefore fundamental that newly available investments focus on the key input variables identified in this report. Taken together, improved management efficiency in LAC countries as a whole could easily save 4% in unit costs; in many countries savings could be as high as 20%.

Financing Projections ²²

As shown in Chapter II, 42% of all first grade children repeat first grade and 29% of all primary students repeat a grade. This causes students to remain in the first six grades for an average of almost seven years while only completing, on average, a little more than four. If the funds which are currently allocated to repeating children are accounted for, repetition cost the region approximately US\$ 2.5 billion in 1988, or almost one fifth of educational spending. Table 7.4 shows the costs of grade repetition in LAC.²³

The most important strategies for improving the quality of primary education are to provide an adequate number of textbooks, to retrain teachers appropriately so that they have a more child-centered approach, and to invest in pre-schooling for at risk children. Books cost around US\$1.50 per copy when printed in editions of 100,000 or more. The provision of three more books and additional materials would increase the unit cost by approximately US\$5. Of this amount perhaps US\$1 could be covered by parents. In countries where there are indigenous populations, special textbooks for bilingual programs which are more expensive would entail a cost of US\$6 per student. Since they would only be needed for about 2 to 2.5 million children, the unit cost of these books for the region would only increase by 20 cents. One week teacher training courses which work, as described in Chapter VI, could be provided to all teachers. Remuneration for one week of teacher training would be about US\$100, plus a similar amount

²² This section is based on projections previously presented in *Education and Knowledge: Basic Pillars of Changing Production Patterns with Social Equity*, CEPAL, Santiago, Chile, 1992.

²³ It should be noted that expenditures on repetition are not completely lost since some learning does take place and the alternative would require increased expenditure on quality.

for subsistence and travel expenses. This amounts to little more than US\$7 when broken down by student. The costs of pre-schooling for at risk children can be significant. However, if low cost, non-formal alternatives are sought then the cost could be about half that of primary education. If public funds go only to the poorest 25% of children, and parents pay 25% of this amount, then the additional cost to government would be about \$14 per student. Research and assessment should add about .3% to costs, or about US\$.45.

**Table 7.4: Latin America and the Caribbean:
Cost of Grade Repetition in 1988**

	1988
Pupils repeating the first grade (%)	46.0
Pupils repeating the sixth grade (%)	18.3
Repeating pupils in grades 1-6 (%)	28.9
Years enrolled in primary school	6.8
Grades passed in primary school	4.2
Percentage of entering pupils who complete sixth grade	60.0
Cost of repetition (billions of US\$)	2.454

Source: Revision of table from Joint CEPAL/UNIDO Industry and Technology Division and UNESCO Regional Office for Education in Latin America and the Caribbean, based on figures from the SIRI (Regional Information System) database.

There may be a number of effective financial management strategies which could lower costs without affecting quality, such as selectively reducing the length of teacher training courses, within certain limits, increasing the student teacher ratio, and firing redundant staff. A very conservative approach to increasing student teacher ratios by slightly more than one student per teacher or in some countries, alternatively, firing excess numbers of administrative staff would result in a savings of about \$5 per student.

The table below summarizes the additional costs to government of these programs, taking into account modest savings which can also be generated.

Table 7.5: LAC Estimated Increase in Unit Costs Resulting from Quality Improvement (in US\$)

Current unit cost (primary school)	US\$118.00
Textbooks	4.00
Research and Assessment	0.45
Teacher Training	7.00
Pre-schooling	11.00
More Effective Financial Management	-5.00
Total Cost	US\$ 135.45

Overall the additional costs would be about US\$23 per student, and about US\$5 could be saved, for a net increase of US\$18, or an increase of 15% in unit costs.

Below, a simulation is carried out to see how these improvements in quality would affect costs and flow rates. Two scenarios are presented: the first is a projection based on a continuation of the current system; the second is a projection based on the introduction of the quality improvements described above.

In the first scenario current technology is maintained and the cost of primary education increases along with the rate of the population. In this scenario, first grade enrollment would increase by 1.6 million children between 1990 and 2000 while sixth grade enrollments would only increase by 200,000 during this time. The completion rate for primary school would remain at 60%. Unit costs, in this scenario, would remain constant and overall recurrent costs would increase at the same rate as the school-age population.

The second scenario shows the impact of introducing technological change to the system: repetition rates drop, and access is slowly widened until nearly all children remain in the system. Gross enrollments increase slightly since former repeaters proceed through the system. Enrollments in primary education decline in the early grades, where the incidence of repetition was higher. Overall, recurrent costs increase by 12% over the cost in Scenario I. Total spending on primary education increases by a marginal .1% of GDP.

Table 7.6: Latin America and the Caribbean: Access, Enrollment, Costs and Investment for Two Scenarios

	Base Cost	Scenario I ¹		Scenario II ²	
	1990	2000	Percentage Increase or Decrease	2000	Percentage Increase or Decrease
Access of each age group	93.2%	93.2%	-	97.4%	-
Enrollment in grade 1 (millions)	17.7	19.3	9%	14.7	-17%
Enrollment in grade 6 (millions)	7.4	7.6	5%	9.9	34%
Enrollment in grades 1-6 (millions)	67.9	72.2	7%	73.2	8%
Costs for grades 1-6					
Per-pupil cost (US\$ 1990)	118	118	-	135	-
Recurrent public expenditure (millions US\$ 1990)	8012	8520	7%	9882	23%
Primary education as a percentage of GDP	1.1%	0.9%		1.0%	

¹ Constant technology.

² Improved technology; increased primary school efficiency.

Source: Joint CEPAL/UNIDO Industry and Technology Division and UNESCO Regional Office for Education in Latin America and the Caribbean, based on estimates obtained with the SMMG model and on figures from SIRI (Regional Information System) database.

Table 7.7 summarizes the cost differences between the two scenarios. While per pupil cost increases, per graduate cost decreases.

**Table 7.7: Latin America and the Caribbean:
Cost Comparison of Scenarios I and II**

(1990 dollars)

	I	II
Primary Education		
Per-pupil cost	118	135
Per-graduate cost	973	870
Total cost (as a percentage of GDP)	0.9	1.0

VIII

Using Information for Decision Making in Primary Education

To improve the quality of primary education in the region, policy makers need good data that is readily available to help them in their decision making process. Three broad types of data measures are required for this task: (a) statistical and other data on inputs, outputs, processes, and costs, (b) information on the systems' output as measured by student assessment, and (c) research on the relationships between inputs, processes, costs and outputs.

A. Educational Statistics

Issues and Trends ²⁴

The quality of indicators and information systems has improved tremendously during the last 10 to 20 years in the region; nevertheless, they need to further evolve and keep up with an international environment that places much higher value on education quality. Current indicator systems are characterized by: (a) excessive concentration on enrollment measures; (b) inadequate access indicators; (c) excessively aggregate data; (d) poor reporting of repetition; and (e) lack of monitoring of school processes.

Excessive Preoccupation with Enrollment. One of the main limitations of education indicators is that they focus largely on enrollment and enrollment ratios, rather than factors which proxy educational quality or school performance. Given the region's history this is understandable since the critical educational objective of LAC countries during the 1960s and 1970s was universal enrollment. The major constraints during this period were insufficient school capacity and a lack of demand or interest in education. Education information systems began to take root in LAC during this period, and since countries' leaders were nearly single-mindedly focused on expanding access they wanted indicator systems that could measure, tabulate, and report on accomplishments in this area. International donors also narrowly focused on educational access and financed systems that mainly collected data on student access,

²⁴ This section is based on a background report prepared by Robin Horn.

repetition, drop out and completion rates. School mapping surveys and school infrastructure surveys, related to the goal of expanding enrollments, were undertaken and occasionally integrated into these information systems. These systems from the beginning were not designed to collect indicators such as inputs, costs, and student learning.

In Brazil, for example, the federal government is responsible for collecting data on the education system. Using surveys which are distributed to all schools, the Ministry of Education annually publishes two years after data collection tables comprised mostly of enrollment-related indicators, including number of schools, school-age population, initial enrollments, total enrollments, repetition and dropout rates, number of teachers, and average student-teacher ratios. Absolutely no school quality-related information, such as educational materials, teacher training, student or teacher absenteeism, length of school time, or time on task is collected or reported. The education systems responsible for collecting this information, which in Brazil are operated by states and municipalities, have little use for this information in planning or resource allocation.

Poor Access Indicators. There are several measures of enrollment: gross enrollment, net enrollment and access. The gross enrollment rate (GER) is the most common measure of access in the region, and perhaps the best understood. The GER is a measure of the proportion of individuals (of any age) enrolled in primary school from the primary school-aged population. The net enrollment rate (NER) is the number of primary school aged children (i.e., under the age of 13) enrolled in primary school as a proportion of the primary school-aged population. The NER is useful because it purges out the over-aged children that inflate the numerator of the GER. Nevertheless, the NER permits over-aged children to be counted at any grade level as long as the age does not exceed the upper age limit, or ceiling, on the primary school age range.

On the other hand, educational access is more complex since it depends on two separate but interdependent factors: the supply of school places and the potential demand for educational services. If enrollment levels are low relative to the population of relevant school-aged children, for example, it may be because too few school places are available or accessible to students nationwide or in particular areas. Alternatively, low enrollment may be a consequence of insufficient interest, on the part of children or their parents, in attending or continuing in school. Lack of demand, in turn, may result from parents' or children's perception that the locally available school provides too few short or long-term benefits relative to the commitment of time, the effort required, and the school fees and associated indirect costs.

Excessive Data Aggregation. Tabulations of the number of children attending school at the different grade levels at a particular point in time tend to be inaccurate because of gross data aggregation. One of the first problems arises from the fact that enrollment measures are tabulated from reports or forms that are annually collected from directors. Some schools don't turn in school reports while others submit completed forms after the data has been input and made official thus leading to under-counting enrollments. A second set of problems is that the

sources of the reports (i.e. teachers and directors) are often very unfamiliar with the whole information system, bureaucratically, psychologically, and temporally. In many cases, the respondents don't see the final reports with their data; thus they rarely see the value of what they are doing, and do not check their responses for accuracy or even consistency. A related outcome is a lack of feedback on the data that would be most useful to them and policy makers. A third problem occurs when some systems reward staff, districts, municipalities, or entire states differentially on the basis of the number of students, classes, or schools for which they are responsible. This type of incentive system drives officials to falsify enrollment data. A fourth problem is that the district or municipal offices in some countries are called upon to summarize the results from school returns in their jurisdiction, and regional offices may in turn be expected to summarize results from the districts in their purview, thus adding additional error in these steps.

The collection and reporting of educational indicators in Brazil is plagued by the problems of data aggregation described above. First, data forms are prepared at the central level, distributed to the states for survey application, collected by the states, tabulated, and finally reported in a consolidated form two years later. Teachers and school directors never see tabulations relevant to their school and in fact see little value in the entire effort. Moreover, when the national Ministry of Education recently introduced the idea of using this data in the Northeast of Brazil in the development of an education efficiency indicator, upon which certain resources would depend, the education secretariats in the States affected were consistent in denying the validity of the enrollment data.

Poor Measurement of Repetition. Under reporting of repetition data in official statistics is a grave problem, leading policy makers to discount repetition as one of the most serious constraints on educational efficiency in the region. There are at least five explanations for this under-reporting (Schiefelbein and Wolff, 1992). First, and probably most important, is the fact that students who drop out of school during the year and then return at the start of the next year are counted as dropouts rather than repeaters. Second, because of insufficient information, lack of time, and inadequate supervision, teachers themselves commit mistakes when filling out the school survey reports. Third, teachers may ask some children to "re-enroll" in the same grade because they believe these students to be too immature to be promoted. They often do not count these children as repeaters. Fourth, parents may present their children who have repeated grades as newcomers when they move them to a new school. Finally, children who have repeated more than once may be counted as single repeaters. Consequently, indicators of repetition based on official reports may be wrong by a substantial amount. A recent comparison of census information with official education statistics found that, in Brazil, while official reports indicated that 4.7 million new students entered first grade in 1987, an analysis of 1987 census data found that 3.2 million children were new first grade entrants. The difference of 1.5 million (47 percent) represents how serious under-reporting of repetition is in this country (Klein and Costa, Ribeiro).

Monitoring of School Processes.²⁵ Throughout LAC, there has been little, if any, effort to explore the qualitative dynamics of the interaction among the conditions within schools. Consequently, researchers often make general recommendations about program design based solely on an assessment of what the numbers say. These generalizations can over-simplify decisions about reform. For example, while there is strong research evidence that the presence of textbooks affects school achievement positively, the dynamics of and efficacy of book use in schools is not well understood. For educational reform and program design to be successful, these quantitative analyses need to be enriched by systematic qualitative information on the dynamics within the schools.

In industrialized countries there is a strong research base on school effectiveness and school improvement, the former literature looking at the factors that influence student outcomes and the latter at the processes that help schools become more effective. Studies over the last two decades in the United States, Great Britain, the Netherlands, and Scandinavia have developed and refined qualitative methodologies for assessing how change occurs in schools and determining what school-level factors produce improvements in educational quality. Key processes and factors that have been shown to influence school effectiveness in developing countries and which could be monitored at the classroom level include: parent and community support, effective support from the educational system, adequate use of educational materials, effective school leadership, a capable teaching force, school flexibility and autonomy, high time in school, high expectations of students, positive teacher attitudes, school order and discipline, an organized curriculum, clear school rewards and incentives, high learning time, variety in teaching strategies, frequent homework, and frequent student assessment and feedback. While individual researchers have initiated work in LAC on these subjects, governments and educational authorities are not yet aware of the possibilities of measuring processes and using them for decision-making.

The Results of Inadequate Information. Information on enrollment ratios or repetition rates is not useful for planners. For example, to increase enrollment ratios, policy makers do not know whether to build more schools, to enhance school quality to attract and retain more children in school, to carry out outreach programs to encourage more parents to send their children to school, or to introduce new ways of transporting children to schools that are beyond a reasonable walking distance. Likewise, if repetition rates are high, even policy makers were to have accurate municipal enrollment and repetition rates, the information would only represent a broad overview of the problem. Are educational resources being applied as efficiently and effectively as they may be? Planners simply do not have the right kind of information to design programs or policies to improve educational outcomes. Consequently, technical staff and education statisticians in education statistics units in many countries spend their efforts on

²⁵ The discussion on monitoring school processes is based on a draft unpublished World Bank report by Ward Heneveld.

collecting, tabulating, and reporting enrollment or enrollment-related data and indicators developed from this data. Because there is little planning that can be carried out using these data, there is little incentive to analyze the data, and little opportunity to put these data to work.

Strategies for Reform

A New Statistical System. The objective of education management information systems should be to improve the effectiveness of educational management, particularly in the areas of education and financial planning, human resources, finances, materials management, and information management. In order to achieve these objectives, managers need to have access to current, accurate and relevant information measuring quality, utilization of staff, pedagogic and other materials, facilities and finances. They also need to have the tools to analyze this information, such as computer systems, analytic knowledge and capacities and then the skills to manage, analyze and report on this information, and to develop programs and interventions based on the analysis. Finally, they need the incentives to make decisions based on information. The incentive structure in ministries, secretariats, and schools must encourage managers to make management decisions and to allocate resources on the basis of relevant information and the analysis of this information, instead of on the basis of political exigencies or on an *ad hoc* basis.

The following additional statistical information, which has been found to be of fundamental importance to learning, should be routinely gathered:

- Number of textbooks per student
- Library and other books per school
- Number of teaching aides in the classroom
- Actual number of school days and hours in the year
- Where the student was last year (to correct for under-reporting of repetition rates)
- How many children attended pre-schooling.

In addition experiments should be undertaken to measure teacher classroom behavior, as discussed below.

Agreeing on the Minimum Inputs into Primary Schools.²⁶ To link statistics with decision making, the development of the Fundamental Quality Level (FQL) indicator system could help education planners and managers track educational resources and direct these resources in such a way as to assure that children in every part of a country or a state have access to a classroom learning environment that is capable of supporting student learning. Under this approach, education authorities specifically identify and agree on minimum education inputs and services, particularly those for which the public sector is responsible, which should be equitably provided to the schools in the public domain. The authorities would agree that these resources should be provided in discreet and complementary packages, and within a specified time frame. This school quality information would be routinely disseminated to local public education interest groups, such as parents and site administrators. In this way, the public will be know whether the specified resources are reaching their schools, and how their schools compare to others with regard to those factors most directly associated with student learning.

Under this approach each school would need to have all of these essential criteria, simultaneously, in particular proportions, to attain the FQL status,²⁷ and therefore to function as a minimally effective school. Schools and school systems can and should seek to provide improvements above these thresholds in order to enrich the learning environment. Nonetheless, schools unable to provide the essential factors would be considered unable to provide adequately for learning.

An FQL Program for a State in Northeast Brazil could look as follows:²⁸

- *student/teacher ratio*: there should be between 30 to 40 students per classroom and per teacher.
- *books*: at least one "approved" language book and one "approved" mathematics textbook books, along with workbooks, is distributed available to every student in first through fourth grades; every second and third grade student would receive an additional social studies and additional science book, also with additional workbooks; at least one set of reading books is available for every class of students.

²⁶ This discussion is based on a background report prepared by Robin Horn.

²⁷ A metaphor may help illustrate the idea of FQL. In baking bread, unless a bakery uses *all of the essential ingredients* (yeast, flour, salt, sugar, water), and uses them in the right proportions, it will either completely fail to make bread, or its bread will be below standard, or unacceptable. After the bakery succeeds in baking bread with the essential ingredients, additional ones may be added to improve the quality of the bread, or to vary it in one way or another.

²⁸ This is the basic package specified in the 1993-1999 Northeast Basic Education II and III projects, designed jointly by Brazil's Ministry of Education and The World Bank.

- *teacher training:* at least 50 percent of the teachers, including the school director, would received intensive training in how to employ educational materials in instruction, that is, how to effectively use a full complement of textbooks, reading books, and workbooks in classroom teaching;
- *teacher qualification:* at least 75 percent of the teachers in each school has the appropriate educational qualification.
- *teacher tools:* every teacher is supplied with a basic set of teaching aids (a chalkboard and chalk, teacher guides to the textbooks, the syllabus, maps, charts, etc.).

In this example, a school in this state meeting every criterion on this list *except for one* would not be considered an FQL school. For example, a school that offers everything specified in the above FQL checklist *except that teachers have not received the appropriate training in the use of textbooks* would be considered below FQL. The FQL standard would assume that children cannot effectively learn in a classroom with teachers unfamiliar with the use of textbooks in the classroom if they did not receive training in textbook-usage techniques—even if there were textbooks provided to all the children in the school.

Other LAC countries have developed programs similar to FQLs. For example, Chile's Program to Improve the Quality of Primary Schools in Poor Areas (also known as the Program of 900 Schools), targeted the poorest schools in the country to receive basic packages of educational inputs, including teacher training and schoolbooks. Colombia's *escuela nueva* is also based on one particular variety of FQL. The *escuela nueva* program specified a basic package for all schools participating in the program. This package included modular teaching materials, student guides to these modules, school libraries, learning corners, self-monitoring mechanisms, and approximately 30 days of in-service teacher training conducted off-site by skilled trainers. Many schools failed to achieve *escuela nueva* (viz., FQL) status when the pilot version of the program was expanded. One of the main reasons for these failures was that the package was compromised by cutting at least in half the number of days of training, and allowing unqualified teachers to conduct the in-service training workshops. Also, lack of coordination resulted unsynchronized delivery of student materials—one to two years after the training.

Monitoring School Processes. LAC countries should initiate pilot programs to monitor school processes and should use the results to feed into the policy process. An example of the framework for analyzing several elements of classroom level processes is given in Chapter VI (from Heneveld, 1993).

The methodology for a detailed examination of school processes (as described by Heneveld) comprises a series of visits to individual schools in order to build an information base about the enabling conditions, school climate, and teaching/learning processes that characterize

the system. Sample size may be small, given the intensity of the methods used, and generalizations need to be tempered by how many and what kind of schools are studied. Each visit to a school, except the last, is followed by data-coding and processing, preliminary analyses of the data and planning for the next visit. The process, in outline, is as follows:

- Establishment of a field team of "Traveling Observers" to conduct studies, to include predominately people with strong teaching experience, not necessarily formal research training;
- Selection by the field team, in consultation with the decision-makers in their system, of the factors from the conceptual framework that experience suggests are a) most important in the education system concerned, and b) most amenable to change within the existing context;
- Further revision and refinement of the selected definitions and indicators to fit the education system to be studied;
- Once the effectiveness factors of schools to be studied have been selected and revised, the team of Traveling Observers will plan in detail the methods for collecting, coding, and structuring information on these factors (for the trial applications of this approach a week-long conference is planned for the teams to complete steps 2-4);
- Using the materials prepared, the Traveling Observers will visit the schools in their sample 3 times for 2-3 days each visit, preferably in pairs. During the visits, the TOs will take notes (not complete questionnaires) and, in the evenings, begin to code them according to how they relate to each of the factors;
- After the first and second visits, the teams will finalize the coding of their notes, transfer the information to summary formats for discussion and analysis, and begin to formulate hypotheses about what the data says are critical conditions in the schools. Based on the analysis after each visit, gaps in the data will be identified and noted as points to focus on during the next visit;
- After the third visit, the TO's will write a profile for each school, organized according to the factors of effectiveness that were selected for study, and they will combine these studies to discuss overall results and to draw conclusions about the problems and possibilities for improvement that exist at the school level in the system that has been studied.

During the initial applications of this methodology, the experimental nature of the investigations and resource limitations have indicated that a very small sample size in each country (3-5 schools) is advisable. As the methodology proves itself usable by educational

practitioners, it is expected that larger sample sizes will become possible and, in order to make effective generalizations, necessary.

A similar approach, under preparation by Schiefelbein, is discussed in Box 8.1 below.

Box 8.1: Meter Stick of Educational Quality

The "Schiefelbein meter stick of educational quality" --designed to measure whether modern learning is taking place-- is currently being field tested in Peru. Using this method, a visitor to a classroom could measure quality quickly through making the following eleven observations:

- (1) How many pages of free-writing are there in students' notebooks?
- (2) Is the last reading test purely rote learning or does it measure higher level skills?
- (3) Does the teacher provide the correct answer in test correction (formative evaluation)?
- (4) Is anything on the walls? Is it lively/interesting? Does it include work of children?
- (5) Are textbooks available and used?
- (6) What is the length of time available for learning (days and hours per day)?
- (7) Does the math homework show problem solving or only repetitive exercises?
- (8) How many children does the teacher expect to repeat?
- (9) Does the teacher have any special strategies for overage or bilingual children? (what is the age heterogeneity in class and how many bilingual children are there?)
- (10) Is there a classroom library and is it used?
- (11) Is any group work going on?

Other Elements of a New Monitoring System. With the use of inexpensive PCs, standard statistics as well as other information such as test scores can be rapidly calculated and feedback can be provided directly to practitioners in the field as well as at the center. Educational managers can identify those schools that are performing very poorly and which require special attention. For example, high rates of first grade repetition in certain schools would suggest that the school director and/or teachers in the schools should be changed or their skills upgraded. A drop in school attendance during the harvest period would show that vacation time should be reallocated, remedial teaching must be organized if time allows it, or learning modules (personalized instruction) would need to be implemented for working-students to catch up with the rest of the class. Similarly, system managers and supervisors could use information on late entrance, overage students, excessively high student-teacher ratios, untrained teachers, students without textbooks, high percentage of non-Spanish speaking students in non-bilingual schools, excessively short length of school-year, to fashion special programs for these schools.

Costs of a New Monitoring System. Most Latin American countries already have a computerized data bank with the usual statistical information gathered from school principals. The programming software required to prepare the printout with the names and addresses of the worst 5% or 10% schools in each region would be of a very low cost. Costs would increase if the amount and type of data gathered were expanded and if efforts were made to improve the quality of the data through motivating and encouraging teachers and school directors to take statistical reports more seriously. The cost of action research could also be significant.

Money for travel and per diem for supervisors to visit at risk schools and prepare a report on possible causes of such low performance (central supervisors may check 10% of the reports of local supervisors to gauge their reliability) is usually already allocated (even though supervisors visit few schools), but some small supplement may be needed in some countries. The total cost should include the travel and per diem for principals and teachers from worst schools to visit the best schools (also identified by the MIS). The costs of a program to monitor school processes would be relatively low since only a small sample of schools would be visited.

If there is no computerized data bank, the total cost to perform this analysis and reporting (including the hardware and software) is estimated in the case of Bolivia and in the case of Mexico at about US\$0.1 per student (US\$1 million per 10 million students). This means that even a marginal reduction in repetition through an MIS which targeted the worst schools would be cost effective.

A new indicator system requires identifying and paying reasonably skilled computer personnel to set up and then manage the system. It also requires a monitoring system and a motivated corps of supervisors, trainers, and school directors. If all the pre-requisites are ensured, then the new system would be feasible.

B. Education Assessments²⁹

Issues and Trends

Uses of National Educational Assessments. The objectives of national assessments of student learning are to measure the educational performance of a nation's or region's students, to evaluate the progress of the schools, school districts, municipalities, or states in achieving curricular or other goals of the education system, and to identify problem areas in the nation's curriculum, classroom instruction, and/or student behaviors. Educational assessments can be a cost-effective means of helping to improve learning outcomes. By itself, of course, measuring student learning will not yield increased student achievement any more than weighing grain will

²⁹ This section is based on a background report prepared by Robin Horn, Laurence Wolff, and Eduardo Velez.

yield increased agricultural output. It is, however, a necessary condition to establishing quantitative targets, assessing the tradeoffs of alternative allocation strategies, input combinations, and instructional technologies, and allocating resources and effort to achieve established targets.

To improve educational quality by any means it is important to establish a base-line measurement of learning. National assessment systems can help educators identify effective inputs and processes, and improve these inputs and process to achieve measurable gains in student learning. Assessments can affect student achievement by mobilizing public attention and support for education, by providing information to educators who in turn revise instructional designs and teacher training, through rewarding, either directly or indirectly, good performance of teachers and schools, through contributions to the analysis of characteristic problems in students' understanding and application of knowledge, and through associated research which identifies more cost-effective allocations of instructional inputs, more effective instructional processes and school environments.

To achieve the goals of improving learning through educational assessments requires a strong design and implementation effort. While it is obviously important to have adequate technical, financial, and institutional support, an often overlooked area is that of dissemination of the results of assessments. From the start, an educational assessment should include a detailed plan as well as adequate funds and staffing for dissemination. Another often overlooked but key element needed to help educators and policy makers pursue the goal of improved learning is the linkage of the assessment with a research program that measures the impact of various educational inputs on learning. Linking assessment information with subsequent labor market performance or other social outcome measures would also help national policy makers by gauging the economic rates of return associated with different educational objectives and outcomes. These types of research programs require collecting and processing data that can be used by the research community to conduct analyses, as well as building in adequate funding and establishing professional linkages with research institutions.

Defining Objectives and Costs The objectives of educational assessments determine what should be measured and how it should be measured. These objectives will therefore need to be clearly articulated from the start. Assessment objectives could include: (a) monitoring and reporting on the nation's progress towards established performance targets; (b) providing quantitative ammunition to encourage or to direct districts or schools to improve performance; (c) furnishing educators with data and research for the purpose of diagnosing and treating learning problems or of changing instructional design and teacher training; and (d) developing materials that encourage teachers to improve their instructional content and pedagogical practices. A decision will be required on what levels and subjects would be tested. A fundamental step in the design of a national assessment test is to decide what information to report, to whom it should be reported, and how to report it. For maximum impact reports and

results would need to be incorporated into pre- and in-service teacher training and other programs and into guidelines for teaching and supervision. Adequate funding and professional linkages will need to be built into the system to ensure that research on the effects of various educational inputs on learning is carried out using the assessment results. A realistic five-year implementation and cost estimate will need to be prepared on the basis of the objectives and modalities selected. Box 8.2 provides a summary of estimated costs in LAC based on the type of test and whether a sample or universe is used.

Technical and Management Issues. When developing any assessment system, fundamental decisions are required in a number of key areas. The first decision is whether to use achievement or aptitude tests. Achievement tests are examinations keyed to measuring the extent to which children learn the intended curriculum, while aptitude tests measure students' "innate" abilities. A second decision to make is whether to use objective or performance tests. Objective tests, such as multiple-choice or short-answer test formats, are more cost-effective, reliable, amenable to statistical analysis, and easier and quicker to score than performance tests, such as long essay examinations or skill demonstrations. However, if it is financially and technically feasible, then performance-type items could also be included in assessments to ensure the teaching and learning of writing, original thinking, analysis, and synthesis. A third decision to make is whether to use criterion or norm-referenced tests. Criterion referenced tests measure whether particular or prescribed standards are met, while norm referenced tests compare and rank student learning with average (mean) achievement levels. Criterion referenced tests are normally the preferred choice for assessments since they are designed to examine students' mastery of the system's educational objectives. A fourth decision is whether to use a sample or a universe. If the assessment is not also part of an effort at certification or selection, and is not designed to provide feedback to every teacher about his/her class, then a scientific sample of students would achieve the objective of improving learning at a fraction of the cost and effort of a full assessment of the student population. However, if the sampling is not done rigorously, then the assessment may provide inaccurate results. A fifth decision will need to be taken on the location and nature of the testing agency. It is usually best for the central assessment agency in Government to be a very lean organization, with a few high quality staff, and which would contract out the major work of undertaking an assessment to a non-profit autonomous institution. If such an institution does not exist, then a long term government policy could be to establish and/or strengthen them.

Box 8.2: Comparison of Costs of Administering Types of Assessment Systems¹

Estimated Costs for Test Administration (Orders of Magnitude)					
Type of test	Fixed cost for test preparation	Estimated cost per test	Number of students in education system	Costs for sample of 2,000 students	Costs for universe of all students
"Objective" test (student shows knowledge and skills by answering multiple choice and open ended questions)	\$100,000	US\$1 per test-taker	400,000 2 million 4 million	\$102,000 \$102,000 \$102,000	\$500,000 \$2.1 million \$4.1 million
Performance test (student shows knowledge and skills through essays, demonstrations, laboratory exercises)	\$50,000	US\$10 per test-taker	400,000 2 million 4 million	\$70,000 \$70,000 \$70,000	\$4.05 million \$20.05 million \$40.05 million

Source: Derived from Locheed, 1991, Table 2, and from Baquival.

¹ Costs are based on rough estimates in countries such as Costa Rica and Ecuador for a primary-level test in Spanish and mathematics. Sample size will vary depending on the objective of the assessment, including how many sub-groups (e.g., urban/rural/public/private, by region) are to be studied. A sample size of 2000 will usually be adequate in terms of giving reliable estimates of scores if only a few sub-groups are to be studied.

Experience in Latin America. A review of the experience of *Chile* and *Costa Rica* is important, since these two countries have implemented the most complete educational assessments in Latin America. The experience of *Mexico* is also of interest since it has a long standing Government agency which has undertaken a variety of assessments based on sample surveys. Through World Bank projects currently being prepared, all three of these countries are planning to strengthen their assessment capacity. Finally Colombia has a high quality university entrance examination system which in the future could be utilized for assessment purposes. The institution responsible for this program recently expanded its activities to support an entrance examination to secondary schools in the Bogotá metropolitan area.

Among the countries reviewed, *Chile* has had the most successful experience with assessments. Chile initiated its program in 1978. After initial problems, including resistance from teachers and students, the program has been in place since 1988, and has successfully measured learning for universes among fourth and eighth graders. The specific aim of the Chile program has been to use the results to affect educational policy and to strengthen teaching practice. The program included a strong dissemination effort involving civil servants, teachers, and parents. The program is continuing with strong support from the central government as well as from practitioners. The program has influenced government policy and there is some evidence that it has affected classroom practice. Specifically the results showing that private schools score higher than public schools have led to efforts to identify means of encouraging increased responsibility at the local and school level. The success of the Chile program appears to be a result of (a) the high quality of its staff, and (b) a strong focus on providing feedback directly to teachers, schools and districts and on informing the general public of the nature and role of assessment program. However, the program has not included research on causes of school failure and has relied almost exclusively on high cost censuses rather than on samples. Furthermore, the relationship between the Ministry of Education (MOE) and the Catholic University implementing the program up to now requires clarification.

Costa Rica initiated its program in 1986 and 1987 and assessed the universe of third, sixth and ninth graders. The program did not have a clear articulated goal, but its implicit goals included (a) using the assessments as a tool to argue in the public arena for additional funding for primary education, and (b) convincing the public of the need to re-introduce the use of partly standardized tests for certification of secondary school graduates. The assessment did not include the objective of using the assessment as a direct tool to improve classroom practice. Feedback to schools and teachers has been ad-hoc. Costa Rica has a limited human resource base, especially in Government, for this kind of activity. With the change of government, the program was in abeyance but will shortly be restarted with World Bank assistance.

The Government of *Mexico* has undertaken numerous assessments and evaluations over a twenty year period. It has also analyzed the national secondary school entrance examination for assessment purposes. The agency responsible for most of this work recently lost many of its good staff and has had an inadequate budget. It has been disseminating results, but on an excessively theoretical and general basis. It is now hoping to strengthen its staffing and is planning a stronger awareness raising program for parents, teachers and school authorities.

Colombia has an excellent autonomous agency undertaking university entrance examinations and examinations for entrance to public secondary schools in the Bogotá metropolitan area. Colombia's exams are a model of modern computerized test preparation and scoring. The challenge for Colombia is to build on this capacity through utilizing selection examinations for purposes of assessment, similar to that of Kenya, as well as to develop a primary school level assessment system.

None of the four countries studied has adequately incorporated research into assessment and testing. This means that much of the value of their effort is being lost because of a lack of additional complementary inputs. Furthermore there is an often unwarranted tendency to test the universe of students rather than to use less expensive samples. Using sample survey methodology will depend on good statistical expertise which is a scarce commodity. These four countries have not put enough effort into dissemination of test results. Chile has the best record but could still do much more to have an impact on classroom behavior. Mexico's dissemination efforts, while widespread, have been excessively general and theoretical and data on a per school or per district basis have not been systematically provided. Costa Rica's dissemination efforts were undertaken on an ad-hoc basis by a testing agency outside Government.

Strategies for Reform

All Latin American countries should establish or strengthen educational assessment systems of varying complexity and extent. Below are listed the fundamental issues regarding building up this capacity.

Planning. To ensure that assessment systems have an impact on the quality of education, the first priority in setting up such systems is to define clearly and from the start the behavioral changes which are sought in specific end users, specifically how assessments are expected to lead to improved classroom practice, and to take a long term systems and institutional development approach to educational assessments. This means preparing a five to ten year implementation and cost plan, and ensuring continuous and full support from the highest government authorities.

Dissemination. From the start a full dissemination plan should be prepared. The managers will need to identify the various clienteles who will use the assessment, hire expert writers and reporters for dissemination, and plan for in-service training programs of teachers based on the assessments. A strong effort will need to be made to educate all concerned parties as to the fact that an assessment is not designed to award or punish, only to assist, and that low scores in a region, city, or school, may not reflect on the teachers since there are many operating external factors.

Organization. The testing department within government should be very small. In principle, most of the assessment design and implementation work should be contracted out to

an independent, stable non-profit agency. If such an agency does not exist, then efforts should be made to build one up over time.

Samples vs. Censuses. Latin American countries will need to seriously consider using sample surveys rather than censuses, especially when the objective is to measure performance of groups of students, schools, and the system as whole. But samples had best not be undertaken if the sampling methodology is inadequate.

Research and Training. Assessment programs will need to include funds for research, as well as agreed upon cooperative programs with local and/or foreign independent non-profit research institutions. Latin American governments will need to finance the training of psychometricians and statisticians. Contracting with non-profit agencies will help to ensure that this expertise remains available to Government, since it is difficult for Government to retain qualified staff with these scarce skills.

Piggy-Backing on Existing Examinations. Countries such as Colombia with well managed selection examinations will need to consider utilizing these examinations for assessment purposes.

C. Educational Research

Issues and Trends

Content of Research. As noted in Chapter III, education inputs in LAC contribute to the acquisition of cognitive achievement, independent of family background characteristics. This has been systematically found in the literature on third world countries since Heyneman and Loxley's (1983) comparative study and was found it again in LAC.

The main problems noted in research in LAC are: lack of analysis of school processes and organization, lack of cost-effectiveness studies and lack of longitudinal panel studies.

In addition, as noted earlier, little quantitative research has been conducted by local teams. To improve the quality of life for their citizens, countries need to undertake systematic research; unfortunately, most countries in the Region do not have the institutional capacity required for education policy research. The experience shows that good research groups, with well-defined objectives struggle to maintain a good level of performance. These groups lack human resources, financial support, and institutional capacity.

Human Resources. Education research institutions were initially developed in the 1960s, mainly as a result of the joint support of governments and international donors. An important investment was in the form of scholarships programs that help to create a number of trained researchers, many at the Ph.D. level (FORD and Fulbright Foundation, LASPAU, etc). In the 1960s and 1970s, many Latin Americans were trained mainly in American universities, producing a critical mass of social science researchers, some of whom started research centers

dealing with education issues. These programs decreased during the 1980s where the number of fellowships for Latin American students was reduced. Local graduates programs proliferated at the time allowing nationals to get degrees (MA and Ph.D) that in many cases lack the academic rigor needed to train good researchers. Some research groups have unsuccessfully tried to form researchers to replace senior researchers that frequently move to administrative positions in the private as well as in the public sector. The experience show that research training in an academic environment is not easily substituted. As a result the increasing human resources capability that formed in the 1960s and 1960s has deteriorated somewhat since the 1980s.

Financial Support. With few exceptions, the most relevant education research groups in the Region are not directly connected to universities. Generally they are non-profit organizations that are economically independent, like Fundacao Carlos Chagas (Brazil-Sao Paulo), Instituto Ser and CINEP (Colombia), CIDE and PIIE (Chile), INSOTEC (Ecuador), CEE (Mexico) or CPES (Paraguay). Their budgets comes mostly from research grants or contracts for specific tasks. In the 1960s and 1970s there was economic support by governments as well as some international foundations like Ford and Rockefeller, IDRC, and others. International funds specifically earmarked for education research declined in the 1980s at the same time that the number of overseas trained researchers (with Master and PH.D degrees) was declining. Direct government support has remained at a very low level and has not replaced the presence of the international agencies. In some instances, Governments have been reluctant to use funds approved for evaluation research in World Bank projects.

Institutional Capacity. Probably the single most important factor in the success on any education research institution in LAC is the existence of one or several persons who initiate and nurture the project. A second important element is building research teams at the interior of the group; isolated researchers are generally successful only when they have a lot of prestige but unless they work together with more junior or less well-known researcher the experience will dry out. These two factors, initiative and team group, needs to be complemented with management capabilities, a factor that cannot be "overstated". Many times, a group with good people and resources fails for not having the administrative tools to manage research.

Strategies for Reform

Nearly all LAC countries do not adequately invest in research. At the same time much of the current research is irrelevant to current educational issues.

Institutional Development. The fundamental need is to build up institutional capacity. Research programs should be fully funded and made a high government priority. Nearly all research should be carried out in non-profit independent agencies rather than in Government agencies, which should focus on determining priorities and writing contracts. Besides supporting specific research agendas, Governments should provide direct institutional support to a small number of high quality research agencies. To ensure that research is relevant, open ad-hoc

committees of researchers, practitioners, economists, and business representatives should meet to set national research priorities and to identify and support promising research groups, ideas, and innovations.

Research Priorities. Research programs should support a variety of basic, applied, developmental, prototype, small-scale, and large scale co-financed innovations. In particular governments should systematically encourage a variety of educational innovations and should support evaluations of successful pilot level innovations and then disseminate results. Long term support for expanding pilot tested innovations should be combined with strong formative evaluation programs. Research should have increased focus on "ethnographic studies" of classroom interactions; on longitudinal studies measuring the "value added" of school interventions; and on cost-effectiveness studies and should seek to rank educational innovations in terms of the cost effectiveness.

Conclusions

- Educational statistical systems measure an excessively narrow range of school inputs. New statistical systems should focus on measuring the key school inputs associated with quality, such as textbook availability and time on task.
- Education planners and leaders should agree on the minimum package of inputs necessary for all schools and the statistical system should track the provision of these inputs.
- Education authorities should support pilot programs to measure the school level process factors which influence school effectiveness.
- Educational assessments up to now have been inadequately planned, implemented, and utilized. Strategies for reform include: long term plans and cost; focussing on the ultimate users; focussing on dissemination, using samples rather than universes; and building up autonomous testing agencies.
- Research programs have been inadequately funded and much research has been irrelevant. Strategies for reform include: building up institutions; establishing a consumers research agenda which could include evaluating pilot programs; focussing on classroom behavior; and supporting longitudinal, formative and cost-effectiveness studies.

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Statistical Annex

Table 1: Factors Affecting Achievement in LAC³⁶

Table 1-A: School Characteristics and Achievement in LAC

Characteristics	Studies		
	Positive Relation	No Relation	Negative Relation
Class Size	1	6	1
Student/Teacher ratio	2	10	9
School Size	3	0	1
Public(1)/Private(0)	2	1	2
Urban(1)/Rural(0)	3	3	0
Full time(1)/Part time(0)	2	6	0
School has secondary	0	0	2
Coed(1)/Non-coed(0)	0	0	2
Male teacher/male student	2	2	0
Female teacher/female student	0	4	0
Morning shift(1)/other(0)	6	4	2

Table 1-B: Educational Materials and Achievement in LAC

Characteristics	Studies		
	Positive Relation	No Relation	Negative Relation
Access to textbooks and reading materials	13	4	0
Other instructional materials	14	17	3
Infrastructure	23	45	2

³⁶ Source: Draft paper by Velez, E., E. Schiefelbein, and J. Valenzuela. "Factors Affecting Achievement in Primary Education: A Review of the Literature for Latin America and the Caribbean." HRO Working Paper.

Table 1-C: Teacher Characteristics and Achievement in LAC

Characteristics	Studies		
	Positive Relation	No Relation	Negative Relation
Years of schooling	31	33	4
Years of experience	25	35	2
In-service training	0	7	1
Economic incentives	0	3	2
SES	3	0	2
Place of living (near=1; far=0)	8	7	0
Subject knowledge	9	9	1
Expectation of pupil performance	2	0	0
Time spent in class preparation	0	1	0
Sex (male=1; female=0)	2	10	7
Satisfaction	4	37	2
Experience with material	4	4	2
Experience in classroom	1	3	0
Additional job	2	6	2
Experience teaching first grade	1	0	0
Full-time dedication(1)/partial(0)	0	1	0
Design own experiments	0	0	1

Table 1-D: Pedagogical Practices and Achievement in LAC

Characteristics	Studies		
	Positive Relation	No Relation	Negative Relation
Homework practices	12	14	2
Evaluation and follow-up	0	0	2
Hours of curriculum	13	30	2
Teacher absenteeism	8	34	18
Remedial programs	1	0	0
Peer group	3	7	1
Emphasis on math and language	7	5	0
Curriculum covered	2	2	1
% of science teachers	0	1	0
% of teachers doing research	2	0	0
Use of new strategies	0	0	1
Active(1)/Passive(0)	6	8	1
Multigraded(1)/Graded(0)	6	2	0

Table 1-E: Management and Achievement in LAC

Characteristics	Studies		
	Positive Relation	No Relation	Negative Relation
Principal years of schooling	2	6	2
Principal years of experience	0	0	3
Experience as school principal	1	0	0
Number of supervisory visits	0	2	1
Number of services offered	3	5	0
Extra curricular activities	0	0	1

Table 1-F: Students Experience and Achievement in LAC

Characteristics	Studies		
	Positive Relation	No Relation	Negative Relation
Preschool	4	4	0
Repetition	0	0	7
Number of schools attended	0	3	1
Attitudes toward study	11	9	0
Previous cognitive achievement	9	5	0
Grade	3	0	0
Parents help with homework	2	3	0
Distance to school	0	0	8
Opinion about teacher	2	2	0
Opinion about school	6	7	0
Understand material	6	6	0
Self-esteem	7	7	0
Attitude toward parents	3	5	0
Attitude toward material	5	4	1
Difficulty of material	0	9	3
Hours of reading per week	1	0	0
Work/House chores	4	7	0

Table 1-G: Health Status and Achievement in LAC

Characteristics	Studies		
	Positive Relation	No Relation	Negative Relation
Height by age	2	1	2
Weight for height	2	0	1
Vision and auditory health	1	1	0

Table 1-H: Socioeconomic Background and Achievement in LAC

Characteristics	Studies		
	Positive Relation	No Relation	Negative Relation
Parents SES	49	29	2
Student gender (male=1)(female=0)	14	11	8
Student age	5	13	16
Family type (two parents=1)(single=0)	1	1	0
Family income	17	10	3
Family size	2	25	40
Mean income of neighborhood	15	35	0
Number of books in household	26	19	0
TV at home	7	1	0
Hours of TV watching	10	4	2
Radio at home	0	3	0
Urban experience	6	2	0
Study conditions at home	3	1	0
Parents age	2	0	1
Number of rooms in house	2	0	1
% of parents large landholders	2	2	0
Mother language (spanish=1)	4	0	2
IQ/Ability	5	0	0

Table 2: Education Deficit Index * for Highest and Lowest Income Quintiles

Country	Lowest Quintile	Highest Quintile	Ratio of Lowest and Highest Quintile	Average for Country	Ratio of Urban to Rural
Argentina	0.22	0.14	1.57	0.19	..
Bolivia (Urban)	0.18	0.16	1.13	0.16	
Brazil	0.61	0.19	3.21	0.42	0.62
Urban	0.55	0.18	3.06	0.36	
Rural	0.67	0.31	2.16	0.58	
Chile	0.16	0.08	2.00	0.12	0.53
Urban	0.14	0.05	2.80	0.10	
Rural	0.20	0.16	1.25	0.19	
Colombia (Urban)	0.40	0.22	1.82	0.31	..
Costa Rica	0.44	0.26	1.69	0.37	0.76
Urban	0.39	0.24	1.63	0.31	
Rural	0.46	0.30	1.53	0.41	
Guatemala	0.75	0.35	2.14	0.59	0.60
Urban	0.58	0.30	1.93	0.41	
Rural	0.76	0.50	1.52	0.687	
Honduras	0.67	0.31	2.16	0.55	0.66
Urban	0.51	0.25	2.04	0.40	
Rural	0.68	0.44	1.55	0.61	
Mexico	..	..	..	..	..
Panama	0.31	0.14	2.21	0.22	0.55
Urban	0.21	0.12	1.75	0.16	
Rural	0.34	0.20	1.70	0.29	
Paraguay	0.63	0.55	1.15	0.59	1.04
Urban	0.63	0.55	1.15	0.59	
Rural	0.64	0.56	1.14	0.57	
Peru	0.32	0.16	2.00	0.24	0.62
Urban	0.24	0.15	1.60	0.21	
Rural	0.38	0.24	1.58	0.34	
Uruguay (Urban)	0.28	0.12	2.33	0.20	..
Venezuela	0.30	0.10	3.00	0.21	0.50
Urban	0.26	0.10	2.60	0.18	
Rural	0.39	0.24	1.63	0.36	

Source: Psacharopoulos, G., et. al., "Poverty and Income Distribution in Latin America: The Story of the 1980s," Human Resources Division, Regional Studies Program, Technical Department, Latin America and the Caribbean, 1992.

* The education deficit index is defined as $(AGE-6-S)/(AGE-6)$ for population aged between 7 and 17 where AGE-6 is the maximum attainable years of schooling in the case of continuous attendance and S is the actual years of schooling attained. Therefore, this is a normalized measure of shortfall of education from what it could be.

Table 3: First Grade Repetition Level by Gender (in percentage)

		Females	Males	Difference
Bolivia	1970	33.3	40.8	-7.5
	1985	31.6	35.4	-3.8
Colombia	1970	51.5	52.3	-0.8
	1985	35.8	35.6	0.2
Chile	1970	34.0	27.0	7.0
	1985	11.4	16.6	-5.2
Ecuador	1970	35.2	38.2	-3.0
	1985	37.7	34.7	3.0
Venezuela	1970	13.3	17.9	-4.6
	1985	22.6	28.6	-6.0
Panama	1970	..	..	..
	1985	23.8	28.2	-4.4
Paraguay	1970	..	..	..
	1985	25.8	30.4	-4.6

Source: E. Schiefelbein, "Repetition: The Key Issue in Latin American Primary Education," The World Bank, LATHR Division, 1989; and UNESCO-OREALC, SIRI Regional Data Base, 1991.

Table 4: Access to Primary Education (1989)

LAC Countries	On Time (%)	Ever (%)
Argentina	100.0	100
Bolivia	60.7	90
Brazil	69.0	92
Chile	39.7	98
Colombia	43.1	83
Costa Rica	43.0	99
Dominican Republic	75.7	74
Ecuador	81.5	100
El Salvador	64.6	73
Guatemala	51.9	72
Haiti	1.3	44
Honduras	82.7	93
Jamaica	81.8	100
Mexico	96.4	100
Panama	82.2	99
Paraguay	100.0	100
Peru	66.2	97
Uruguay	43.4	100
Venezuela	76.0	95
Weighted Average	66.0	90

Source: UNESCO/OREALC

Table 5: Pre-School Participation Rate of Age-Group 3-5 Years Old by Income Quartile

Country	Area	Year	Total	Quartiles	
				C1	C4
Brazil	Urban	1987	50.7	39.9	75.4
	Rural	1987	22.8	19.1	33.5
Uruguay	Montevideo	1989	58.4	42.4	85.9
	Urban	1989	43.4	31.4	75.6
Venezuela	Urban	1986	30	22.9	42.7
	Rural	1986	17.2	13	25.7

Source: CEPAL, Household Surveys of years indicated.

Note: C1= Lowest Quartile of household mean.

Note: C4= Highest quartile of household income.

Table 6: Estimated Pre-School Spending per Student, Student-Teacher Ratios and Ratio Teachers Salaries of Comparator Group and Primary Teachers

Country	Student Teacher Ratio		Change	Pre-School Teacher/Comparator Group Earnings Ratio	Pre-School Unit Cost 1989	Ratio Pre/Primary Unit Cost
	1980	1989		1989	(1990 U\$)	
Argentina	21	18	-3	...	126	0.9
Bolivia	...	27	...	...	57	0.8
Brazil	26	23	-3	0.45	...	...
Chile	...	30	...	...	148	0.7
Colombia	30	24	-6	...	65	1.0
Costa Rica	32	21	-11	0.95	189	1.1
Dominican Rep.	...	...	...	...	...	...
Ecuador	25	22	-3	0.83	108	1.1
El Salvador	47	36	-11	...	62	1.0
Guatemala	29	16	-13	1.07	64	1.8
Haiti	...	...	...	...	...	...
Honduras	55	33	-22	...	112	1.0
Jamaica	...	34	...	...	91	0.7
Mexico	33	29	-4	...	106	0.9
Peru	57	27	-30	...	21	0.9
Panama	28	23	-5	0.81	215	0.9
Paraguay	...	...	...	...	...	...
Uruguay	...	13	...	...	364	1.4
Venezuela	26	18	-8	...	199	0.9
Average	34	25	-10	0.82	124	1.1

Note: *1985 figures; Unit cost estimated on the basis of student-teacher ratios, and estimated teacher salary ratios between the primary and pre-primary

Sources: UNESCO; Psacharopoulos, G., J. Valenzuela, and M. Arends. "Teacher's Salaries in Latin America: A Comparative Analysis." Policy Research Working Papers No. 1086, The World Bank.

**Table 7: Availability of Educational Materials in
Grades 1-5 in SECAB Countries - 1991
(in percent)**

Country	Dictionary and Atlas	Student Notebook	Auxiliary Materials
Bolivia	37	100	66
Colombia	43	99	90
Chile	50	100	75
Ecuador	24	86	65
Panama	33	99	85
Peru	27	87	52
Venezuela	45	97	58
Wtd. Avg.	37	95	70

Source: SECAB, 1992

**Table 8: Availability of Didactic Materials
in Grades 1-5 in SECAB Countries (1991)**

Didactic Material	Percentage of Schools With Material
Blackboard	99
Maps	82
Library Books	73
Posters	73
Globes	70
Stapler	40
Abacus	42
Geometric Blocks	34
Musical Instruments	30
Scales	27
Board Games	26
Logic Blocks	19
Television	19
Overhead Projector	15
VCR	10
Computer	5

Source: SECAB, 1992

Table 9: Sources of Finance for School Supplies, 1991

	Bolivia	Ecuador	Peru	Venezuela	Colombia	Chile
Textbooks						
- MOE	1%	0%	2%	5%	34%	50%
- Parents	94%	99%	89%	86%	66%	50%
- Teachers	4%	0%	0%	1%	0%	0%
- Other	1%	1%	10%	8%	0%	0%
Teacher Guides						
- MOE	0%	0%	3%	5%	38%	30%
- Parents	10%	24%	15%	16%	0%	10%
- Teachers	89%	75%	72%	69%	0%	60%
- Other	1%	1%	10%	10%	62%	0%
Notebooks						
- MOE	0%	n.a.	0%	3%	10%	10%
- Parents	93%	n.a.	95%	94%	90%	90%
- Teachers	4%	n.a.	2%	0%	0%	0%
- Other	3%	n.a.	3%	3%	0%	0%
Pencils, Pens, etc.						
- MOE	0%	n.a.	1%	5%	0%	10%
- Parents	93%	n.a.	95%	92%	95%	90%
- Teachers	4%	n.a.	1%	2%	5%	0%
- Other	3%	n.a.	3%	1%	0%	0%
School Supplies						
- MOE	14%	15%	n.a.	57%	70%	44%
- Parents	67%	72%	n.a.	18%	30%	56%
- Teachers	0%	13%	n.a.	3%	0%	0%
- Other	20%	0%	n.a.	23%	0%	0%

Source: SECAB

Table 10: Teachers in the Labor Force

Country	Year	Percentage of Teachers in the Labor Force
Argentina	1989	5.8
Bolivia	1989	7.2
Brazil	1989	3.6
Chile	1989	5.0
Colombia	1989	3.7
Costa Rica	1989	3.6
Ecuador	1987	5.1
Honduras	1991	3.7
Panama	1989	7.1
Peru	1990	4.9
Uruguay	1989	4.3
Venezuela	1989	5.0
Average		4.9

Source: Psacharopoulos, G., and J. Valenzuela and M. Arends, 1993.
 "Teachers' Salaries in Latin America: A Comparative Analysis."
 Policy Research Working Papers No. 1086, Technical Department,
 Latin America and the Caribbean Region, The World Bank.

Table 11: Trained and Untrained Teachers

Country	Trained		Untrained		Total
	Number	Percent	Number	Percent	
Columbia	96,656	70.6	40,272	29.4	136,928
Chile	75,116	98.6	1093	1.4	76,209
Ecuador	50,650	81.1	11,801	18.9	62,451
Peru	61,575	56.8	46,920	43.3	108,495
Venezuela	135,969	81.7	30,523	18.3	166,492
Costa Rica	10,490	80.2	2583	19.8	13,073
El Salvador	14,746	97.7	341	2.3	15,087
Honduras	15,099	67.7	7192	32.3	22,291
Nicaragua	11,161	59.9	7484	40.1	18,645
Panama	12,940	98.4	206	1.6	13,146
Dominican Republic	20,046	91.7	1804	8.3	21,850
Jamaica	7,897	90.9	789	9.1	8686
Guyana	2,230	64.8	1214	35.3	3444
Trinidad and Tobago	6,016	88.0	823	12.0	6839
Region	581,154	79.0	154,759	21.0	735,913

Source: UNESCO/OREALC

**Table 12: Primary Teachers Mean Years of
Schooling by Urban-Rural Location**

		Years of Schooling	
		1980	1989
Brazil	Urban	11.85	14.15
	Rural	7.26	12.99
Costa Rica	Urban	...	14.39
	Rural	...	13.96
Honduras	Urban	...	12.60
	Rural	...	11.45
Panama	Urban	16.35	14.15
	Rural	14.26	12.99

Source: Psacharopoulos, et al., 1993

Table 13: Primary Unit Costs and Unit Costs as a Ratio of GDP per Capita (Constant US\$ 1990)

Country	Primary Unit Costs			Unit Costs as a Ratio of GDP per Capita
	1980	1989	Change 1989	1989
Argentina	164	142	-22	0.01
Bolivia	136	73	-63	0.12
Brazil	214	200	-14	0.06
Chile	151	203	52	0.10
Colombia	76	62	-14	0.05
Costa Rica	236	175	-61	0.09
Dominican Rep.	64	25	-39	0.04
Ecuador	173	97	-76	0.09
El Salvador	175	63	-112	0.11
Guatemala	48	35	-13	0.04
Haiti	29	35	6	0.08
Honduras	115	115	0	0.11
Jamaica	145	127	-18	0.08
Mexico	221	114	-107	0.04
Panama	271	237	-34	0.12
Paraguay	68	50	-18	0.03
Peru	41	23	-18	0.01
Uruguay	566	256	-310	0.05
Venezuela	277	213	-14	0.09
Average	164	118	-46	0.07

Source: World Bank data.

Table 14: Government Expenditure on Primary Education as a Percentage of Total Educational Expenditure

Country	1980	1985	1989	Percentage Change		
				1980-85	1985-89	1980-89
Argentina	40.1	37.7(a)	...	-2.4	...	...
Bolivia	58.9	...	66.3 (b)	...	...	7.4
Brazil	44.8	45.9	...	1.1	...	...
Chile	42.7	51.0	50.0	8.3	-1.0	7.3
Colombia	44.4	39.2	34.2	-5.2	-5.0	-10.2
Costa Rica	28.0	35.1	37.1	7.1	2.0	9.1
Dominican Rep.	36.8	46.5	...	9.7	...	...
Ecuador	20.6	45.5	41.9	24.9	-3.6	21.3
El Salvador	61.9	...	...	...	...	...
Guatemala	38.2(c)	...	...	...	...	...
Haiti	59.3	51.0	53.9	-8.3	2.9	-5.4
Honduras	61.9	49.1	46.6 (d)	-12.8	2.5	-15.3
Jamaica	33.7	29.9	26.6	-3.8	-3.3	-7.1
Mexico	39.7	24.3	22.4	-15.4	-1.9	-17.3
Panama	46.3	38.3	37.6	-8.0	-0.7	-8.7
Paraguay	...	36.6	...	...	...	...
Peru	45.1	35.6	31.1 (d)	-9.5	-4.5	14.0
Uruguay	48.4	37.7	35.8 (b)	-10.7	-1.9	-12.6
Venezuela	17.5	24.5 (a)	25.0 (b)	7.0	0.5	7.5

Note: (a) 1984 figures; (b) 1988 figures; (c) 1982 figures; (d) 1987 figures.

Source: UNESCO, Statistical Yearbook, 1992.

Table 15: Estimated Primary Teacher Salaries

Country	Primary Teacher Salaries (in 1990 US\$)		
	1980	1989	Percentage Change
Argentina	3,116	2,563	-17.7%
Bolivia	2,584	1,734	-32.9%
Brazil	5,286	4,560	-13.7%
Chile	3,730	5,014	34.4%
Colombia	2,238	1,767	-21.0%
Costa Rica	6,278	4,489	-28.0%
Dominican Rep.	2,432	974	-60.0%
Ecuador	5,917	2,672	-54.8%
El Salvador	7,980	2,514	-68.4%
Guatemala	1,550	1,164	-24.9%
Haiti	1,212	1,264	4.3%
Honduras	4,042	3,933	-2.7%
Jamaica	5,648	3,499	-38.0%
Mexico	8,188	3,466	-57.7%
Panama	6,951	5,404	-22.3%
Paraguay	1,744	998	-42.8%
Peru	1,441	634	-56.0%
Uruguay	11,829	5,350	-54.8%
Venezuela	5,823	4,047	-30.5%
Average	4,986	3,251	-34.8%

Based on Tables 7.1 and 7.3.

Assumes that 95% of unit costs go to teacher salaries.

Table 16: Household Survey Data Description

Country/Date	Survey Name	Executing Agency	Geographical Coverage	Number of Households	Income Concept
Argentina May 1989	Encuesta Permanente de Hogares	Instituto Nacion de Estadistica y Censos	Metropolitan Area	16,759	Total household income
Brazil Fourth Quarter 1989	Pesquisa Nacional por Amostra de Domicilios (PNAD)	Fundacao Instituto Brasileiro de Geographia y Estadistica	National	70,777	Total household income
Chile Fourth quarter 1989	Encuesta Nacional del Empleo (PIDEH)	Instituto Nacional de Estadistica y Censos	National	32,456	Total household income
Colombia September 1989	Encuesta Nacional de Hogares - Fuerza de Trabajo (ENH)	Departamento Administrativo Nacional de Estadistica	Barranquilla, Bogota, Bucaramanga, Cali, Manizales, Medellin y Pasto	17,949	Total household income
Guatemala Apr 4-July 24, 1989	Encuesta nacional Socio-Demografica (ENSD)	Instituto Nacional de Estadistica	National	10,934	Total household income
Honduras September 1989	Encuesta Permanente de Hogares de Propositos Multiples (EPHPM)	Direccion General de Estadisticas y Censos	National	8,648	Total household income
Mexico Third Quarter 1989	Encuesta Nacional de Ingreso- Gasto de los Hogares	Instituto Nacional de Estadistica Geographia e Informatica	National	11,535	Total household income
Panama August 1989	Encuesta de Hogares, Mano de Obra (EMO)	Direccion de Estadisticas y Censos	National	8,817	Total household income
Paraguay June-August 1990	Encuesta de Hogares, Mano de Obra (EMO)	Direccion General de Estadistica y Censos	Metropolitan Area	4,791	Total household income
Peru June-July 1990	Peru LSMS	Instituto Cuanto	Lima	1,385	Consumption expenditure
Uruguay Second half 1981	Encuesta Nacional de Hogares (ENH)	Direccion General de Estadisticas y Censos	Urban	21,473	Total household income
Venezuela Second half 1989	Encuesta de Hogares por Muestra (EHM)	Oficina Central de Estadisticas e Informatica	National	61,385	Total household income

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