Education Statistics in Latin America and the Caribbean

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Technical Study

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Acknowledgments

Executive Summary

This report, financed by the Ford Foundation and executed by the UNESCO Regional Office for Education in Latin America and the Caribbean, examines the status of education statistics in the region. Its principal findings are summarized below.

The state of education statistics in Latin America and the Caribbean (LAC) has improved notably in recent years, but serious problems remain.

C   Countries are much more successful in providing education statistics than they were even a decade ago. They have received considerable external aid to improve their education statistics, indicators and management information systems (although this has been less efficient than it might have been). Technology made available through this aid has helped a great deal and statistics are more timely and accessible, can be analyzed more easily, and have fewer errors. There is not, however, a body of agreed-upon knowledge about what constitutes a good education statistics system, nor a cadre of knowledgeable consultants to whom aid agencies and countries could turn. Innovative practices are found in a number of countries: for example, Brazil's new system of education information, Paraguay's powerful school mapping system, Mendoza's experiments with individual student records, or Nicaragua's extensive set of indicators of efficiency of student flows. There is also growing awareness of the importance of statistics, indicators and management information. Some subregional groups such as MERCOSUR and the Organization of Eastern Caribbean States are taking the initiative to establish comparable statistics and systems of indicators, and countries of the Convenio Andrés Bello have indicated an interest in the subject.

It is possible to identify three main groups of countries in terms of the degree of advancement and sophistication of their education statistics.

C   Although the lines between them are not sharp, there are three fairly clear groups of countries, each with different needs:

-   Large and sophisticated countries (often Federal countries) that have well-developed education statistics systems (although some of these have only recently made major changes): Argentina, Brazil, Chile, and Mexico within our sample of countries;

-   Poor countries that are lagging badly: Bolivia, Guyana, some of the countries of Central America;

-   A large "in-between" group in which there are important improvements under way, but major problems still exist: Ecuador, Jamaica, Paraguay, Uruguay and others.

There are several kinds of problems that affect education statistics systems: technical, institutional and others.

C   Technical Problems

-   There is a lack of key data, for example on student age, in many countries; and there is inadequate measurement or estimation of variables such as repetition.

-   There are conceptual problems (especially in relation to measurement of student flows and their efficiency).

-   There is often a mismatch between time periods to which enrollment, expenditure and population by age group refer.

-   There is a lack of clear and consistent definitions and terminology. There is a need for an agreed-upon glossary of education statistics terms. There are also serious

weaknesses in whole categories of statistics, such as finance or student achievement data, as will discussed below.

C   Institutional Problems

- Isolation of education statistics units from other sources of information and from the locus of decision making; lack of contact with other entities to obtain data for indicators; decision makers don't make use of education statistics because a culture of basing decisions on data and analysis is lacking. The need for education indicators is only recently being recognized. There is a tendency for special subjects, such as sector costs and finance, to be handled by specialists who are not part of the usual education statistics system.

- The utilization of education statistics and indicators is extremely weak. While this may be due in part to the poor quality of the statistics that are available (which causes decision makers and analysts not to use them), there is also underutilization of information that is already available.

- Decentralization of education systems, not only in federal systems but also in countries that are decentralizing or deconcentrating their system management, may complicate the process of gathering, analyzing and using education statistics (but it may also provide valuable opportunities for changing old practices and improving the usefulness of education statistics for sector management.)

- There is no forum for exchange of information between countries about education statistics and indicators (except in special cases such as MERCOSUR).

- Lack of regional leadership: UNESCO-Santiago's Regional Information System (SIRI) has made advances in gathering and publishing regional data but does not have the resources to provide technical assistance

or guidance in establishing norms and sound practices. No other institution has assumed a leadership role.

C   Other Problems and Issues

- There is a need for a sound, agreed-upon set of categories of statistics and indicators. This study proposes a set of eight categories: 1) context; 2) students and participation; 3) teachers and other staff; 4) schools and non-teacher inputs; 5) internal efficiency (repetition, transition, survival rates); 6) external efficiency (income and employment rates by level of educational attainment and economic rates of return); 7) sector costs and finance, and; 8) student achievement measured in terms of learning outcomes.

- Important categories of statistics and indicators are especially weak, or in some cases totally absent from "usual" education statistics. Key weaknesses are found in: 1) indicators of internal efficiency, especially repetition; 2) indicators of "external efficiency" or labor market outcomes; 3) indicators of sector cost and finance, and; 4) indicators of quality and student learning.

- Cutting across all categories, there are great weaknesses in the areas of pre-primary education and virtually all information about the university level.

- It is important to distinguish between the design of indicators and information systems for national use in monitoring changes and improving management, and the development of indicators for international comparisons. There may be overlaps between the two but they are necessarily different.

THE ROLE OF INTERNATIONAL AID IN IMPROVING EDUCATION STATISTICS

C   As noted, there have been many projects or

project components that proposed to improve education statistics, indicators and management information systems. Virtually every country on our sample has received some aid for these purposes. This has greatly improved the availability of technology but has not provided cogent guidance on the development of fully-adequate statistics, indicators or information systems.

C This study grew out of an earlier study of coordination of aid to education. There has been a notable lack of coordination between international organizations concerning education statistics issues at the regional level.

C Countries perceive international organizations as only requesting information, often duplicated or based on different concepts and definitions.

C Efforts to provide guidance and help at a regional or subregional level have so far been of limited use: UNESCO's Quito workshop of January, 1995, did not produce a report; the recent subregional workshop on sector costs and finance in Montevideo (May, 1997) showed that there is a difference between the recommendations offered and the concrete needs of country participants.

C There is also a lack of communication and coordination between experts in international agencies and their perception of needs and realities on one hand, and the needs as perceived by country specialists on the other.

C The Organization of American States' Inter-American Center for Statistics Training (CIENES) has a mandate to provide training but little technical expertise in the area of education statistics. It appears that CIENES has no budget allocation for 1998.

C CELADE has developed a powerful model linking census and education data to provide a basis for physical planning and school mapping. This needs to be more widely disseminated.

C There is a unit at CEPAL that works with Household Surveys and is interested in using education variables to produce useful indicators.

C In one instance a group of small countries—the Organization of Eastern Caribbean States—has worked together to develop a common system of education statistics and indicators. German bilateral aid (GTZ) has provided modest but important assistance.

C In general there has been a profusion of activities to improve education statistics, supported at least in part by international donors. But these multiple activities have lacked coherence and have not been conducive to region-wide agreement on key issues, nor to development of compatible statistics and indicators.

FINDINGS REGARDING EXPERIENCES IN OTHER REGIONS

C There is still no agreement at a worldwide level on a system of classification of education. UNESCO's International Standard Classification of Education (ISCED) has been sharply criticized for lack of clarity and operational definitions. A revised version of the ISECD was presented to UNESCO's General Conference in 1997.

C OECD system of indicators has been evolving over some ten years and is now highly developed. Because it reflects the interests and needs of its member countries, it would have to be adapted for LAC countries to adopt it. Much of its work (and its mode of working) could be gradually incorporated in LAC, depending on the level of sophistication of the countries involved, especially in areas such as indicators of sector cost and finance. Countries such as Spain, Portugal and Mexico have been able to meet the requirements of the OECD system.

C In Africa, the Association for Development of African Education (ADEA) and its Working Group on Education Statistics (WGES) have emphasized development of national capacities. A program to strengthen "National Education

Statistical Information Systems" (NESIS) has enabled countries to participate in the design of standard modules that may promote the development of compatible systems. A standard "profile" of education statistics and indicators has been developed for countries of the region. The ADEA/WGES/NESIS capacity-building model might be of use for the LAC countries in the least-developed group.

CONCLUSIONS AND RECOMMENDATIONS

C   Two recent announcements are of great importance for the future of education statistics and indicators in LAC. First, UNESCO's Director General has announced the establishment of a new UNESCO International Institute for Statistics; second UNESCO and the OECD are collaborating in support of a pilot program to lay the groundwork for a "World Education Indicators" system. Several LAC countries will be invited to participate in this system. These developments seem to herald 1) rising interest in strengthening education statistics and indicators worldwide; 2) the assumption by UNESCO of a leadership role that has been lacking in the past, and; 3) formation of consensus around the indicator system developed by the OECD's INES Project regarding the content and technical specifications of a common indicator system.

C   While these are very positive developments, efforts to improve education statistics and indicators in LAC will still face a number of challenges. Exercise of a leadership role by the new Institute for Statistics will call for a delicate balance between strength on one hand and careful diplomacy on the other.

C   The Pilot Project on Development of World Education Indicators will provide a much-needed basis for consensus on the content of an indicator system, as well as a valuable body of technical and conceptual work developed over a ten year period and at great cost by the OECD countries. Several observations are in order:

C   It would be advisable to involve the countries (and the UNESCO Regional Offices) in decisions about the project from its early stages. Early communications indicate that this is being done.

C   If several of the most advanced countries of the region participate in the pilot project, this still leaves the remaining countries without a basis for consensus at a critical time. It would be desirable to disseminate information about the pilot project to a wider group of countries; a task that might logically fall to UNESCO-Santiago.

C   The MERCOSUR countries (which include some of the most advanced countries of LAC) have already initiated an effort to create a common indicator system for the subregion. This should be respected, supported and not overridden. Similar efforts by other subregional groups of countries should also receive encouragement and support.

C   Whatever the design of a worldwide indicator system that emerges, there will probably still be additional statistics and indicators that countries of LAC need to guide their sector policies and plans. These can be added to the basic model, leading to the development of a Statistical Profile of Education in Latin America and the Caribbean that reflects the needs, priorities and level of development of the countries of the region.

C   Some of the countries chosen for the Pilot Project may experience difficulties in meeting OECD's standards for reliability and accuracy of data and quality control, and in providing the data needed for indicators of costs and finance, labor market outcomes and cognitive results. This will be even more true of countries in the less-advanced and least-developed groups.

C   Efforts to enable countries to improve their national systems in order to participate in the World Education Indicators systems will require capacity building, which in turn will require resources. Such efforts will be more effective if there is a body of agreed-upon information to

guide them, as promises to be the case. External assistance from both the major financial aid institutions—multilateral and bilateral—and the UNESCO Regional Office for Education will be essential.

Origins, Aims and Design of the Study

This report summarizes the results of a study of the status of education statistics in Latin America and the Caribbean (LAC), financed by the Ford Foundation and implemented by UNESCO's Regional Office for Education in Latin America and the Caribbean (UNESCO-Santiago). The study is designed as the first stage of a longer-term program to improve educational statistics in the Latin America and the Caribbean. According to the original concept, subsequent stages would establish consensus on technically sound, feasible designs of statistical systems and education indicators; and would disseminate this information and promote exchanges of information on education statistics, indicators and management information systems among countries of the region.

This longer-term plan may be subject to change, however, in the light of the announcement that there is to be a new UNESCO International Institute for Statistics. A memo from the UNESCO Director General dated June 26, 1997 confirms the establishment of the Institute. Another memo dated July 9 announces plans for a joint UNESCO-OECD pilot project leading to a "world education indicators" system, which would be based on the highly respected system of education indicators developed for the OECD countries. In the light of these developments, it appears that consensus about the content of a system of indicators will be solidly established around the OECD model. All this has far-reaching implications for education statistics and indicators in Latin America the Caribbean, as is discussed at greater length in the fifth chapter of this report.

The present study is one result of a meeting of donor organizations held in Washington, D.C. in January, 1996, that considered the issue of coordination of aid to education in the LAC region. The meeting concluded that the donors should undertake coordinated activities in three areas, the first and highest-priority of these being the improvement of education statistics. At the Seventh Conference of Ministers of Education of Latin America and the Caribbean (MINEDLAC VII) in Kingston, Jamaica in May, 1996, the ministers also recommended actions to improve education statistics. UNESCO-Santiago prepared a proposal for a project to carry out this first or diagnostic phase of such a program, which was approved by the Ford Foundation in July of 1996.

The objectives of the project are: 1) to survey and describe the status of national and regional education statistics programs and related activities, including existing efforts of donor organizations to improve statistics; 2) to gather information on best practices throughout the region and the world that might be adapted for in LAC, and; 3) to lay the groundwork for later activities aimed at improving statistical systems and indicators in LAC; and for sub-regional seminars and other activities to disseminate the information gathered. This report summarizes the findings of the study.

The long-run goal of the proposed program is to improve education statistics and indicators throughout LAC. It is essential to recognize, however, that such improvement will ultimately depend on the countries themselves. The role of international organizations will be to provide leadership, stimulate the exchange of information on how to improve statistics and indicators, and provide financial and technical assistance to the countries when so requested.

The intended audience for this report includes educational policy makers and statistical professionals in the countries of Latin America and the Caribbean representatives of donor organizations, and others with an interest in improving educational statistics. A draft of the report was circulated for comment to the project's Advisory Board, composed largely of representatives of donor agencies, and was discussed at the May, 1997 meeting in Washington

mentioned above. This final version of the report incorporates the suggestions made at that meeting, including participants' views on the next steps that should be taken toward the long-term goal of improving education statistics in the region.

The study is based on two kinds of information inputs. The first is a study of sixteen education statistics systems in a sample of sixteen countries and other entities in LAC. The sample includes: 1) all three of the large, federal countries of the region (Argentina, Brazil and Mexico); 2) two representative subnational polities in these (the Province of Mendoza in Argentina and the State of Ceará in Brazil); 3) ten other countries of the region chosen on the basis of their diversity, and; 4) one subregional program to develop a common set of education statistics and indicators among the nine countries of the Organization of Eastern Caribbean States (OECS). In all, the sample covers fourteen countries (including the OECS as one) from every subregion of LAC.[1] They range from the largest to the smallest countries and represent some of the most advanced and sophisticated education statistics systems as well as some of the least-developed in the region. The sample gives special attention to the federal countries, examining in some detail the relationship between central and subnational entities in two of these, and looks as well at the only functioning subregional program to develop a common system of education statistics and indicators for multiple countries. (The countries of the South American Common Market, MERCOSUR, are now in the process of developing a common system of education indicators, as discussed below) The author conducted four of the country studies early in the life of the project with the aim of fine-tuning the project design. Members of the Advisory Board have made

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The countries and areas included are: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guatemala, Guyana, Jamaica, Mendoza, México, Nicaragua, Paraguay, and Uruguay. The sixteenth member of the sample, the Organization of Eastern Caribbean States, includes: Antigua/Barbuda, Anguilla, the British Virgin Islands, Dominica, Grenada, St.Kitts/Nevis, Montserrat, Santa Lucia and St. Vincent and the Grenadines.

suggestions that influenced the final design of the sample.

The second set of inputs is a series of consultancy studies. These include: 1) an "inventory" of programs and projects being carried out throughout the region, most with financial and technical aid from international organizations; 2) a special study of the International Education Statistics (INES) project of the Organization for Economic Cooperation and Development (OECD), plus information gathered by the Academy for Educational Development on the National Educational Statistical Information Systems (NESIS) program supported by UNESCO-Paris and the Working Group on Education Statistics of the Association for Development of Education in Africa, and; 3) a paper considering major issues and problems affecting education statistics and their use in LAC, prepared by a senior consultant with exceptionally broad experience.

Published documentation from various sources, including UNESCO-Paris, the OECD/INES Project, the Academy for Educational Development and international organizations has enriched the information available to the study. A bibliography of documents reviewed is included at the end of the report.

In the course of the study the author became aware that the four countries of the MERCOSUR, plus Chile as an associate member of the common market, were interested in establishing a common system of education indicators for the region. Education representatives of the MERCOSUR countries decided that the Chilean Ministry of Education should organize a workshop that would lead to decisions on the design of the system. UNESCO-Santiago and project staff have participated with representatives of the Ministry in planning the workshop, recommending that it include information on the OECD/INES experience, the development of the common "UOE" questionnaire being used by UNESCO, the OECD and the statistics unit of the European Union, EUROSTAT; and the status of revising the International Standard Classification of Education (ISCED). The experience of working with a group of countries that are in the process of developing a system of indicators has brought added

insight to the study.

The Condition of Education Statistics in LAC: Problems, Issues and Challenges

INTRODUCTION

This chapter draws on the country reports on national education statistics systems that have been prepared for this study;[2] on the information available from special consultant studies, and on published sources of information, communications with experts and the experience of the author. It aims to provide a description of the general condition of education statistics systems in LAC countries and the main issues and problems they face. After a brief assessment of the advances that have been achieved in many systems during the past decade, it considers both technical and institutional problems and difficulties that confront education statistics systems in the region. Its particular focus is on the challenges countries of the region would face in establishing a regional system of education indicators.

Groupings of Countries

Obviously there are great differences between the countries of LAC in terms of the nature and structure of their education systems, the degree of development and sophistication of their statistics. It will be useful to identify three fairly clear groupings of countries, although the distinctions between them are not sharp and there is in reality a continuum. First there are the "advanced" countries that have quite sophisticated systems of statistics and education indicators (although in some cases this is a relatively recent development). These include Argentina, Brazil, Chile and Mexico. At the other end of the continuum are "difficult" countries such as Bolivia, Guyana and some of the Central American countries. In between is the largest group, which can be called "improving" countries. Despite major improvements under way,

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[2] The phrase "country reports" will be used to describe studies of national and state/provincial systems as well as the study of the Organization of Eastern Caribbean States' common statistics system (counted as one study).

these countries still have serious problems to overcome; included in this grouping are countries such as Ecuador, Jamaica, Paraguay and Uruguay. While the needs of the advanced countries tend to be for inputs of information—either from other countries or from outside the region—that will enable them to continue to fine-tune and improve their systems, the countries with greatest difficulties need fundamental capacity building, which will require ample resources and time. For the countries in between, the need is for specific improvements in areas of weakness and, as in the case of the advanced countries, flows of information about best practices inside and outside the region and ways of improving even the best parts of their systems. Countries in all three categories would benefit if they had access to an agreed-upon body of information on good practices and the general outlines of a desirable system of education statistics, indicators and management information.

Domestic and International Uses of Statistics

It is also important to make clear that education statistics, and particularly systems of indicators, have two uses: 1) for national level policy, programming, monitoring of reform efforts and all the uses for which educational statistics have traditionally been gathered and published, and; 2) for purposes of regional and international studies, research and inter-country comparisons. Statistics and indicators for national use need to be much more fine-grained and detailed and, for example, to stress comparisons between subnational regions. National indicators are needed to monitor the status and progress of the country's education system, especially in circumstances of substantial change, as in the case of sector reforms. Such indicators are often designed to provide specific guidance for policy and planning as well as feedback to subnational units (provinces, municipalities, school districts and even individual schools) on how their performance has changed or

compares with similar entities. National policy questions may call for in-depth information in some areas that goes far beyond the needs of international comparisons. This may require sample-based studies that might not be feasible to replicate regionally. Similarly, the need to trace changes in indicators through time, while important for both kinds of uses, may call for more frequent monitoring in the case of national studies than for international comparisons.

International indicator systems cannot aspire to the scope and depth of national systems. They are intended to permit comparisons between countries or groups of countries and therefore issues of comparability, largely absent by definition in most national systems, are of great importance. Research on issues at the regional level—such as relative efficiency, balance between public and private sector support, or levels of economic commitment and effort—calls for good international indicators. Users include researchers, international aid organizations and others with an interest in comparisons within or between regions. And individual countries have an interest in knowing how their education systems compare with those of other countries in their region or at the same level of economic development.

The two kinds of uses obviously overlap and may require many of the same data. This study will not make a sharp distinction between national and international uses of statistics and indicators in most cases, but readers should bear the two separate uses in mind. Recommendations about a desirable basic set of indicators are presented in the third chapter, and discussion of steps that might be taken in the future (fifth chapter), refer to indicators for international comparison.

Improvements

There is no doubt that there have been major improvements in education statistics in Latin America and the Caribbean over the past decades. Important among these are improvements in the speed with which data are gathered, processed and made available; greater numbers of variables covered; greater completeness and accuracy of information, and in some cases the inclusion of data on educational quality and achievement and the

development of education indicators relevant to policy questions. In many cases these improvements have been made possible through the use of computers and software that greatly improve the speed, accuracy and ease of compiling and processing educational data. International aid projects have often financed the purchase of computing equipment and related training, as well as technical assistance. Most of the countries of the region have received at least some international aid to improve their education statistics systems over the last decade, although the aid may not have been as effective as it might have been, as will be discussed below.

Around the region one encounters interesting and exciting new developments in education statistics, indicators, information systems and related areas. A few cases provide a flavor of these changes and developments.

A number of countries such as Brazil, Chile, Ecuador and Paraguay already have or are in the process of developing national systems of education indicators. The countries of the MERCOSUR area have decided to develop a common system of indicators and the six Eastern Caribbean States have already established a common system for reporting education statistics. UNESCO's Regional Information System (*Sistema Regional de Informacion*, SIRI) publishes 48 tables presenting education indicators in its periodic *Condition of Education in Latin America and the Caribbean.*[3] The Inter-American Development Bank includes a selection of six education indicators in Part 2 of its publication *Latin America in Graphs*[4].

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[3] UNESCO-Santiago has published four editions of *The Condition of Education* or *La situación educativa*, the most recent covering the period 1980-1994 (Santiago: UNESCO, 1996). These are published in English and Spanish. Throughout the rest of this report SIRI's publications will be referred to as *The Condition of Education*, generally referring to the most recent edition unless another is specifically indicated. Education indicators appear on pp. 655-702 of the most recent (1996) edition.

[4] Inter-American Developmen Bank, Latin America in Graphs: Demographic, Economic and social Trends (1974-1994). Baltimore: Johns Hopkins University Press, 1995; pp. 37-64.

UNICEF is developing a set of indicators to monitor the welfare of children, which includes an ambitious set of education indicators. These systems of indicators are not consistent between each other and some are based on quite old and limited models, but there is growing interest in and movement toward the use of indicators.

Argentina is developing a Federal Network of Education Information that serves as a framework through which the provinces can provide compatible information. Brazil, which has had a powerful planning model called PROFLUXO for some years, has very recently redesigned its entire education information system. This new system has been designed with the aim of providing feedback of useful information for thecountry's states and local and municipal education authorities for planning and policy. It includes a set of 30 indicators that have been adapted from the OECD/INES model. Most of the states have adopted the new information system, including Ceará (a member of the sample of polities studied in depth).

Both Chile and the Argentine province of Mendoza are experimenting with systems of individual student records, which will overcome a number of technical problems in measuring repetition and desertion and provide a rich base of information for research and policy analysis.

The *Centro Latinoamericano de Demografía* (CELADE) of the UN Economic Commission for Latin America and the Caribbean has developed a very sophisticated system of school mapping in which each school is uniquely identified using geo-referencing technology, and an extensive data base provides data at the level of individual schools overlaid on maps of different scales. Paraguay has implemented this system with financial aid from the IDB and it is fully functional. A smaller demonstration of this impressive tool for planning is also operating in several communities near Santiago, Chile, where the emphasis is on using the system of community level planning and decision-making.

Publications are not only appearing on a more timely basis but are much better designed and more attractive and useful. Ecuador, for example, has a very colorful new publication that uses graphic presentation of a limited set of data to make information accessible to readers. In Paraguay, a special public information office of the Education Planning Secretariat is responsible for attending to the needs of various audiences for information about the education system and publishing small, informative folders that can be disseminated widely.

Fifteen countries that are members of the Latin American Laboratory for Evaluation of Educational Quality at UNESCO-Santiago are developing systems for measuring student learning, which represents a major advance in this area. Although there are a number of problems involved in establishing comparable indicators of student learning, active efforts are under way in this direction. Colombia was a full participant in the IEA Third International Mathematics and Science Study (TIMSS) and Chile and possibly other countries of the region will participate in IEA studies in the future.

These are some of the more salient examples of improvements in the generation and use of information in the education sector that are in operation or are being developed in various countries of the region. Despite these bright spots, there are many problems that plague national education statistics systems and pose barriers to the development of education indicators that could provide a basis for research and analysis at a regional level.

PROBLEMS OF A TECHNICAL NATURE

This section is intended to provide a general impression of the most important technical problems that the study finds.

Differences in Structure and Problems of Comparability

Most countries of the region have some variation of a twelve-year system of primary and secondary education, which may be divided in various ways.

Most common in Latin America is a structure based on six years of primary, two or three years of "basic" or middle secondary and the remaining four or three years called higher secondary, "diversified" (or "polymodal," as in Argentina) or some similar term. The official entering age is either six or seven in most countries of Latin America. The countries of the Caribbean are almost unanimous in using a seven-four structure, with age five as the official entering age (Jamaica is one exception). A 4-4-4 system is found in a few private schools. Table 1 gives a graphic presentation of the structure of education systems in the region. Countries call the different levels of primary, lower and upper secondary by different names and group them differently. Establishing a system of comparable indicators would require reaching agreement on classification and terminology.

As discussed in the following paragraph, structural differences cause problems of defining what constitutes "primary" or "basic" or "secondary" education. The Education Statistics Division of UNESCO/Paris is developing a revised version of the International Standard Classification of Education (ISCED) that is intended to improve the situation and make it easier to establish comparability.[5] The ISCED is still under revision (a revised version was presented to the UNESCO General Conference in 1997). The most complex problems of classification concern the postsecondary level, and forms of vocational/ technical/professional education. These difficult classification issues do not constitute an acute problem for the countries of Latin America and the Caribbean, because their higher education systems have not become as complex as in northern hemisphere countries. ISCED categories zero through three that cover pre-primary through upper secondary education have long been used and will probably not be subject to significant change, although critics argue that there is still a need for clearer operational definitions. It will probably be necessary to combine all the ISCED categories above level three in LAC countries for pragmatic reasons, because it is so difficult to obtain complete and reliable information on the postsecondary level.

[5]   International Standard Classification of Education (ISCED) Revised VERSION III. Paris: UNESCO Division of Statistics, January, 1997.

Table 1
Structure of National Education Systems*

COUNTRIES	0-2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
									AGES (years)									
Argentina		PS	PS	PS	P1	P1	P1	P2	P2	P2	P3	P3	P3	S	S	S		
Bolivia			PS	PS	P1	P1	P1	P1	P1	P2	P2	P3	S1	S1	S2	S2		
Brazil			PS	PS	PS	P	P	P	P	P	P	P	P	S	S	S	S	
Colombia		PS	PS	PS	P	P	P	P	P	P	P	P	P	S	S			
Costa Rica				PS	PS	P1	P1	P1	P2	P2	P2	P3	P3	P3	S	S	S	
Cuba				PS	P	P	P	P	P	P	S1	S1	S1	S2	S2	S2		
Chile			PS	PS	P1	P1	P1	P1	P1	P2	P2	P2	S	S	S	S		
Dominican Republic					PS	P	P	P	P	P	P	P	P	S	S	S	S	
Ecuador			PS	PS/P	P	P	P	P	P	S1	S1	S1	S2	S2	S2			
El Salvador					P	P	P	P	P	P	P	P	P	P	S	S	S	
Guatemala				PS	PS	P	P	P	P	P	P	S1	S1	S1	S2	S2	S2	S2
Haiti		PS	PS	PS	P	P	P	P	P	P	S1	S1	S1	S2	S2	S2		
Honduras					P	P	P	P	P	P	P	S1	S1	S1	S2	S2		
Mexico			PS	PS	P	P	P	P	P	P	P	S	S	S	S	S		
Nicaragua		PS	PS	PS	PS	P1	P1	P1	P1	P2	P2	S1	S1	S1	S2	S2	S2	
Panama			PS	PS	P	P	P	P	P	P	S1	S1	S1	S2	S2	S2		
Paraguay			PS	PS	P1	P1	P1	P2	P2	P2	P3	P3	P3	S	S	S		
Peru		PS	PS	PS	P	P	P	P	P	P	S	S	S	S	S			
Uruguay		PS	PS	PS	P	P	P	P	P	P	S1	S1	S1	S2	S2	S2		
Venezuela		PS	PS	PS	P	P	P	P	P	P	P	P	P	S	S			
Antigua and Barbuda				P	P	P	P	P	P	P	S1	S1	S1	S2	S2			
Bahamas		PS	PS	P	P	P	P	P	P	S1	S1	S1	S2	S2	S2			
Barbados		PS	PS	P	P	P	P	P	P	P	S	S	S	S	S	S		
Belize		PS	PS	P	P	P	P	P	P	P	P	S	S	S	S			
British Virgin Islands		PS	PS	P	P	P	P	P	P	P								
Dominica		PS	PS	P	P	P	P	P	P	P	S	S	S	S	S			
Grenada		PS	PS	P	P	P	P	P	P	P	S	S	S	S	S			
Jamaica		PS	PS	P	P	P	P	P	P	S1	S1	S1	S2	S2	S2			
Montserrat		PS	PS	P	P	P	P	P	P	P	S	S	S	S	S			
Netherlands Antilles			PS	PS	P	P	P	P	P	P	S	S	S	S	S			
St. Kitts and Nevis		PS	PS	P	P	P	P	P	P	P	S1	S1	S1	S1	S2	S2		
St. Vincent and Granadines		PS	PS	P	P	P	P	P	P	P	S1	S1	S1	S1	S1	S2	S2	
St. Lucia				P	P	P	P	P	P	P	S1	S1	S1	S2	S2			
Trinidad & Tobago		PS	PS	P	P	P	P	P	P	P	S1	S1	S1	S2	S2			

(*) Does not include adult education, special education or other out-of school branches.

Symbols:

PS: Pre-Primary   P: Primary   P1: Primary First Cycle   P2: Primary Second Cycle   P3: Primary Third Cycle
S: Secondary   S1: Secondary First Cycle   S2: Secondary Second Cycle

Sources: UNESCO-Santiago Regional Information System (SIRI), drawn from UNESCO Statistical Yearbook 1995 and individual country sources.
Argentina: Primary (grades 1-9): General Basic Education. Secondary (grades 10-12): Polimodal Education.
Bolivia: Primary: grades 1-5=Fundamental Education; grades 6-7=Specialized; grade 8=Applied. Secondary: Grades 9-10=Technology; grades 11-12= Differential.
Brazil: Primary: Fundamental Education. Secondary: Intermediate Education.
Colombia: Primary: Basic Formal Education.
Costa Rica: Primary (9 grades): General Basic Education. Secondary: Diversified Education, Fourth Cycle.
Cuba: Secondary: grades 7-8=Basic Secondary; grades 10-12= Pre-university.
Chile: Primary: General Basic Education (grades 1-8).
Paraguay: Primary: General Basic Education (grades 1-9). Secondary: Bachillerato.
Peru: Pre-primary: First Level. Primary: Second Level. Secondary: Third Level.

Venezuela: Primary: General Basic Education (grades 1-9).

Differences in Terminology and Definitions

There are many differences between countries in the terms and definitions they use to describe their education systems and related functions, not only for the major levels and types of education as mentioned in the previous point but also to describe concepts such as repetition, promotion, failure, wastage, dropouts; class, section, stream; teacher, instructor, professor, classroom teacher, director, headmaster, school, establishment, education unit; vocational (or technical) education versus "diversified" education, versus training (which may be provided by another ministry). In Spanish, the various terms include *repetición*, *aprobación*, *reprobación*, *deserción*, *abandono*, *desgranamiento*; *clase*, *sección*, *paralelo*; *maestro*, *docente*, *profesor*, *profesor de aula*, *director(a)*; *escuela*, *plantel*; *educación vocacional* (or *técnica*) vs. "*técnico-profesional*" (as used in Chile) vs. *capacitación* (which may be provided by another ministry). Even when the revised ISCED is completed and brings some order to these definitions and terminology, there will continue to be complications. This project has initiated the preparation of a glossary, which will be subject to review and comment by the countries of the South American Common Market (MERCOSUR) at a forthcoming workshop on education statistics.

Problems Regarding Key Variables and Indicators

Enrollment and Attendance: Enrollment, the most basic variable, is collected in all countries, but it is not always easy to obtain good enrollment data. Private sector enrollment is not included in 31 percent of the countries studied. Countries collect the data at different periods of the school year and some collect twice during the year. Comparisons of enrollment require great care to assure that the figures compared are truly equivalent. Within individual countries, indicators comparing enrollment with school-age population may be based on different time periods. In some countries, such as Nicaragua and Ecuador, there are two or more school calendars due to climatic differences between regions or differences in harvest or rainy seasons, which introduces an additional lag of six to nine months before they can publish total enrollment figures. In our sample, only Chile presents attendance data (because subvention payments to public and private schools are based on attendance). Yet, low attendance rates are important indicators of equity and quality problems and are associated with repetition and dropouts. Table 2 provides an indication of what enrollment and other variables are covered in the statistics systems surveyed in connection with this study. In many countries in would be feasible to present figures for additional variables, or to calculate missing indicators. Table 2 reflects data that are actually gathered and published as part of the education statistics system.

Repetition: This is perhaps the most problematical variable. Over 80 percent of the countries reporting gather data on repetition (one plans to do so and one reports "failures" instead). In many cases, however, repetition data are based on responses of teachers or school directors to questions (phrased differently in different countries) about the number of children who are repeating. Answers may be based on the school's records or some other formal criterion, students' answers when asked, teachers' recollections, or some other basis. The main problem, however, is that such statistics fail to take account of students who leave one school and enter another in the same grade the following year. These are usually counted as first-time students in that grade when in fact they are repeating.

Table 2
Variables

Variables	Argentina[2]	Bolivia[4]	Brazil	Ceará (Brazil)	Colombia	East Caribbean	Chile	Ecuador
Public Enrollment		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Private Enrollment		Yes	Yes		Yes		Yes	Yes
Mixed Enrollment						Yes	Yes	Yes
Pre-primary Enrollment	Planned	Yes	Yes	Yes	Yes	Yes	Yes	Yes
University Enrollment	Planned[3]	Yes[5]	Yes	Yes		Yes	Yes	
Enrollment by Single Year Age Group	Planned	Yes[6]	Not spec.	Yes		Yes	Yes	Yes[10]
Enrollment by Gender	Planned	Yes	Yes [8]			Yes	Yes	Yes
Gross ER Pre-primary				Yes			Yes	Planned
Gross ER (ISCED 1, 1-2, 2, 2-3, 3)				Yes	Yes		1-2, 3	Planned
Gross ER (ISCED > 3)								Planned
Net Enrollment Ratio				Yes[9]				Planned
Average Attendance		Yes				Yes	Yes	
Repetition	Planned	Yes	Yes	Yes		Yes	Failed	Yes
Desertion		Yes	Yes	Yes		Yes	Yes	Yes
Cohort Survival		Yes					Yes	Planned
Teachers by Level of Training[1]		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Students-Teacher Ratio			Yes	Yes		Yes		Planned
General & Vocational Education		Yes[7]	Yes	Yes			Yes	
Adult & Non-Formal Education	Planned	Yes	Yes			Yes	Yes	
Literacy				Yes			15+	
Education Budget as % of Total Budget			Yes	Yes			Yes	
Total Ed. Expenditure (Public & Private)			Yes					
Public Ed.. Expenditure as % of GDP			Yes				Yes	
Earnings by Educational Level								
Employment by Educational Level								
Achievement Testing		Yes	Yes			Yes	Yes	

1) Excludes university faculties and personnel.
2) In 1994, Argentina carried out a Census of Education covering all educational establishments and teachers.
3) Non-university post-secondary education.
4) Information for Bolivia refers only to general secondary education. Technical-vocational education is shown in a separate chapter.
5) Only the form for private universities is included.
6) Age data for adult education are for age groups.
7) Only general education.
8) Not available for higher education.
9) For grade one only.
10) Data available but not tabulated.

Table 2 (cont.)
Variables

Variables	Jamaica	Guatemala	Guyana	Mendoza (Argentina)	Mexico	Nicaragua[3]	Paraguay	Uruguay
Public Enrollment	Yes		Yes	Yes	Yes	Yes*	Yes	Yes
Private Enrollment	Yes	Yes		Yes		Yes*	Yes	Yes
Mixed Enrollment		Yes				Yes		
Pre-primary Enrollment	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
University Enrollment	Yes		Yes	Yes	Yes			Yes
Enrollment by Single Year Age Group	Yes		Yes	Not spec.	Yes	Yes*	Yes	Not spec.
Enrollment by Gender	Yes	Yes	Yes	Yes	Yes	Yes*	Yes	Yes
Gross ER Pre-primary		Yes	Yes			Yes		Feasible
Gross ER (ISCED 1, 1-2, 2, 2-3, 3)		Yes	Yes	Feasible		Yes		Feasible
Gross ER (ISCED > 3)				Feasible		Yes		
Net Enrollment Ratio		Yes	Yes	Yes	Yes	Yes		Feasible
Average Attendance	Yes					Yes[4]		Yes[5]
Repetition	Yes	Yes[1]	Yes	Yes	Yes	Yes*	Yes	Yes[6]
Desertion		Yes[2]	Yes	Yes	Yes	Yes[2]	Yes	Yes[7]
Cohort Survival				Feasible	Yes	Yes		
Teachers by Level of Training[1]	Yes		Yes		Yes	Yes	Yes	Yes
Students-Teacher Ratio	Yes	Yes	Yes	Feasible	Yes	Feasible		Feasible
General & Vocational Education	Yes		Yes	Yes	Graduates		Yes	Yes
Adult & Non-Formal Education		Yes					Yes	
Literacy					Yes			
Education Budget as % of Total Budget	Yes		Yes	Yes	Yes	Yes		
Total Ed. Expenditure (Public & Private)								
Public Ed.. Expenditure as % of GDP	Yes			Feasible	Yes			
Earnings by Educational Level								
Employment by Educational Level								
Achievement Testing	Yes		Yes	Yes			% passed	Yes[8]

1) In secondary schools, repetition data only available for first cycle of general secondary.
2) Only within-year dropouts: beginning enrollment minus end-of-year enrollment.
3) Variables with * exclude post-secondary/higher education. Secondary refers to "general" only.
4) Data available but not tabulated.
5) Only for pre-primary.
6) Primary and secondary general.
7) Only for primary level, without specifying what type of dropout.
8) Testing of all students takes place at the end of sixth grade, carried out by the Superior Directive Council (CODICEN) and not the Ministry of Education.

Scholars at the UNESCO office in Santiago, led by Dr. Ernesto Schiefelbein, have devised a methodology to estimate the *minimum* amount of repetition that exists at the level of entire countries. This methodology, based on a model using age-grade matrices for two consecutive years to show the minimum amount of repetition that must exist, makes it possible to see that the standard data on repetition as reported in national education statistics consistently underestimate repetition, in many cases by a very large amount.[6] On the basis of this model and data from a variety of sources, the *Condition of Education* presents data on repetition rates at the primary school level.[7]

Dropouts or Wastage: For many of the same reasons as in the case of repetition, this variable is also poorly measured and the definitions and terms are inconsistent between countries (and sometimes between provinces or states in federal countries). One-fifth of the countries reporting do not present data on dropouts or desertion. There is also a term *desgranamiento* that usually means the total loss of students between one year and the next due to all causes including repetition, drop-outs, possible transfers, and death.

Indicators of Coverage or Participation: The Organization for Economic Cooperation and Development (OECD) publishes its highly-regarded system of education indicators in *Education at a Glance: OECD Indicators*.[8] In it, the term "participation" in "formal" basic, secondary and tertiary education is used to mean the portion of the relevant age group that enrolled in school. Countries in LAC tend to use different terms, definitions and methods of calculating gross and net enrollment. Thirty-eight percent of the countries reporting included the gross enrollment ratio for primary and secondary education in their statistics. Data on the relevant school-age population group, which should be based upon census data, may be incorrectly calculated and are often based on noncomparable time periods. Roughly a third of the countries reporting did not even include information on enrollment by single-year age group in their statistics, without which it is not possible to calculate net enrollment ratios. In periods between censuses, data on school-age population must be based on estimates. This leads to inaccuracies: the longer the time since the last census, the greater the error in the estimates (and some countries have not had a census for over ten years). For internal comparisons of enrollment ratios between rural and urban areas, this can lead to major inaccuracies when there are high rates of rural-urban migration.

Indicators of Internal Efficiency: Measurement of the efficiency of flows of students through the system is complicated by the problems of definition and inaccurate measurement mentioned in connection with repetition and desertion. In addition, concepts of efficiency and the formulas used for calculating efficiency indicators differ between countries, and concepts such as "average years of schooling"(*promedio de años de escolaridad*) and "years required to complete a level" (*años requeridos para terminar el nivel*) are not clearly and consistently defined. The OECD does not calculate efficiency of student flows or transition rates below the end of compulsory schooling, since virtually all students remain in school and, apparently, repetition is not a serious problem. *Education at a Glance* includes a complex indicator of "transition characteristics" measured "towards the end of compulsory schooling" (P3.3) but even the sophisticated OECD system has difficulty in establishing indicators of efficiency of student flows. In Latin America and the Caribbean, repetition and dropout rates are high, especially in the early primary grades. Clarifying the concept of efficiency and indicators to represent it will be challenging but

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[6] The model, named for its developers (Schiefelbein, Molfino, Martínez, Grozzi) will be called SMMG in the remainder of this report. See Schiefelbein, "Simulation Model for Modelling Student Flows," Washington: World Bank, 1987.

[7] See *The Condition of Education*, Op. Cit. Table 48, p.702.

[8] See OECD/CERI, *Education at a Glance*, Paris: 1996. This is the fourth edition of this publication, a product of the OECD's International Education Statistics (INES) project. Future references to this series will mention only *Education at a Glance*. Unless otherwise indicated, references are to the fourth (1996) edition. See third and fourth chapters for more extensive discussions of OECD/INES.

would be very helpful for international comparisons.

Data on Teachers: Data on teachers, their numbers, professional status, training and other characteristics are gathered in a variety of ways, according to different definitions, and using widely differing terminology. There are a number of problems in gathering data on teachers, and roughly 20 percent of the countries reporting did not include information on teachers by level of their training. Thirty-eight percent included student/teacher ratios among their indicators (although it would be possible to calculate this in other countries). Data on secondary school teachers are especially problematical because teachers are often hired on the basis of paid teaching hours (*horas cátedra*) and countries rarely make a serious effort to calculate the "full-time equivalent" number of teachers, which makes it very difficult to compare ratios of students to teaching staff. In addition, the definitions of whether a staff member is a teacher, school administrator (many may be both) or some other category of staff are chaotic. In some cases data are based on central payroll figures and bear little relationship to the number of working teachers in contact with students. *Education at a Glance* provides a "ratio of students to teaching staff" (p32), but comments that national averages may conceal great differences within countries.

Data on Schools: Again, definitions may be complicated. Often there are two or more "schools" or *planteles* operating in the same school building, either on different shifts or sometimes at the same time (as in the case of a preschool operating at the same time and in the same building as a primary school). Individual countries are usually clear about their definitions but these may differ between countries.

Data on Nonteacher Inputs: These are usually nonexistent. A very few countries, such as Chile, provide data on expenditures for textbooks and teaching materials but in most cases it is impossible to obtain information on the availability of textbooks and other teaching materials without a special study. Occasionally there are data indicating whether schools have special facilities such as libraries or science laboratories but these are based on special studies using different methodologies and definitions.

Data on the time devoted to education usually report only the duration of the school year and do not indicate the number of hours students spend in class. For the first time in the 1996 edition, *Education at a Glance* includes "total intended instruction time for students at the lower secondary level" (p11) among its indicators, based on a special survey of member countries in 1995.[9]

Data on Pre-primary Education: Those countries that include pre-primary enrollment in their statistics tend to report only enrollment in public pre-primary facilities. Enrollment relates to multi-year age ranges (in some cases, zero through five) and so enrollment ratios are largely meaningless. There are problems of defining and differentiating between different categories of pre-primary schools as well as between schools serving different age groups. Information on privately provided pre-primary education is completely lacking in many cases.

Data on Vocational and Technical Education: This is an area where efforts to revise the ISCED have encountered problems. In LAC there are serious problems of definition, involving differences between "vocational education" or "pre-employment" classes in academic, "comprehensive" or diversified streams and separate *técnico-profesional* streams at the secondary level, as in Chile. Nine of the sixteen countries studied break down secondary enrollment between general and vocational/technical streams; it would be feasible to do so in three other countries, based on questions included in the forms but not published. Data on vocational and technical training provided by ministries other than the Ministry of Education are often lacking, as are data on private sector vocational education and training. Such problems make it difficult to obtain and interpret data on vocational/ technical education, especially on expenditure by level and type of VTE.

Data on the Tertiary Level: This is one of the areas of greatest difficulty. There are serious gaps in the available information and 38 percent of the countries reporting did not include university enrollment in

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9   See Education at a Glance, 1996, pp. 137-39.

their statistics. Autonomous universities are not under the control of ministries of education and resist efforts to gather information, especially on expenditures, quality and efficiency. Few higher education systems calculate enrollment based on full-time equivalents. Even definition of what constitutes an enrolled student is a problem. There are complex patterns of public and private nonuniversity postsecondary education, which is another of the problems confronting revision of the ISCED. There is no standard period of time in which students are expected to complete university studies.

Data on Adult and Out-of-School Education: Information on these categories of education is very uneven and completely missing in 62 percent of the countries studied. Where the education statistics system does report on adult and/or out-of-school education, there is a tendency to consider only programs offered by the Ministry of Education, even though other ministries may have important programs in the area. There are various problems of defining what constitutes adult or nonformal or out-of-school education.

Literacy Data: This is another area in which traditional education statistics are often weak (because data are usually compiled by the national Census Bureau or other agency). Only three of the periodic statistical publications in countries studied included literacy data, although UNESCO's World Education Report shows literacy figures for virtually all countries. Countries may use different criteria for what constitutes literacy, such as those who have completed four years of school, or those who can pass a short reading test. The issue of "functional literacy" is becoming important in LAC and is a further source of confusion. Even some of the most advanced countries of the world have difficulty defining functional literacy.

Data on Educational Quality and Achievement: Latin America does not have a tradition of testing or assessment. While this is changing rapidly, most countries are only now beginning to institute systems of achievement testing and evaluation. In some cases these are based on testing all students at specific levels (the levels differ between countries); in others they are based on the concept of national assessments, in which tests are administered in samples of schools or to samples of students. (The U.S. National Assessment of Educational Progress is the model for some of these systems). Only a few countries in LAC have ever participated in the International Assessment of Educational Achievement (IEA). Only two countries participated in the Third International Math and Science Study (TIMSS) and one of the countries that did refused to allow the data to be published. A very few countries have long-established systems of educational testing, report data on educational quality, and use such data to design and target interventions to improve the schools that are in greatest need. Half of the sixteen countries studied included information on test scores, and in many cases this was based on the percentage of students who passed end-of-year or end-of-cycle tests.

Education Cost and Finance Data and Indicators: This is an area in which there are serious shortcomings. Many traditional education statistics systems simply do not include data on public expenditure on education, even though the data may be available within the Ministry of Education. In only half the countries studied was the education budget compared with the total public budget; one quarter compared public education expenditure with GDP. Information on private spending on education is even less likely to be included. Only one of the countries reporting provided total sector spending including both public and private. The SIRI *Condition of Education* has two tables that report total public expenditure on education (in absolute terms, converted to dollars) and growth of the education budget; the education budget as percent of total public expenditure (but not gross product) and a table of "General Economic Indicators" that includes one column in which education expenditure is compared with defense expenditure. Detail of expenditures by level of education or category of expenditure are often missing, as are data on cost per student per year. This is an area to which the OECD/INES project has devoted a great deal of attention and has developed a highly refined system of indicators.

Problems of Quality Control, Accuracy and Reliability

Most countries conduct no formal studies to assure that the data supplied by schools or subnational units (provinces, regions, etc.) are complete and accurate. Quality control is largely the responsibility of regional supervisors, who know the individual schools and can recognize obviously erroneous data. Use of computers has made it possible to conduct some checks for internal inconsistencies and missing data.

In some cases there are incentives for schools to under or overeport enrollment (permission to open new sections and therefore have additional teachers depends on enrollment, for example. In Ecuador, university budgets depend in part on enrollment and enrollment data are thought to be inflated by approximately a factor of two.) There are, in addition, problems of corruption involving teachers that do not exist (or do not teach). In the worst cases the number of "ghost" teachers or *fantasmas* may reach 25 percent of the teaching force.

Lack of Time Series Data

Countries that have experienced severe internal turbulence (Nicaragua and El Salvador, for example) or financial crisis (Argentina was unable to afford to tabulate enrollment data) have gaps in their data series. These countries are now making great efforts to establish education statistics systems but some historical data can never be reconstructed.

Education Indicators

Some countries do not have systems of education indicators and gather and publish only the most basic descriptive information. An increasing number of countries make calculations of key indicators (enrollment ratios, etc.) but omit many other important indicators (especially in areas such as sector finance) and do not have a recognized system of indicators. In one country visited in the course of this study, a consultant paid from an international aid project was preparing a set of education indicators based on a UNESCO/IIEP system that was published almost twenty years ago. Neither the consultant nor the chief of statistics had ever heard of the OECD system of indicators. A few countries have or are developing systems of indicators that are reasonably

complete, but these vary greatly and in many cases they lack important data inputs that must come from outside the education sector. Whole categories of indicators, such as labor market results of education, sector costs and finance and learning outcomes are omitted (see the following section).

Lack of a Categorization Scheme for Education Statistics and Indicators

As will be discussed at length in the third chapter, it is useful to be able to organize education statistics and indicators into categories. This makes it easier to talk about statistics, identify areas of strength and weakness, and assign priorities for work to improve statistical systems. There is no agreed-upon categorization scheme in the LAC region, although Brazil's new information system utilizes a set of five categories that has much to recommend it. None of the systems such as the OECD indicators or the NESIS "profile" of education in sub-Saharan Africa provide fully satisfactory models. Discussions among countries (as in the case of the MERCOSUR countries' efforts to develop a common system of indicators), experts in education statistics and international organizations seeking to improve statistics would be easier if there were an agreed upon set of categories.

PROBLEMS OF AN INSTITUTIONAL NATURE

Some of the problems that affect education statistics in LAC arise not from technical problems of data gathering, processing and use, or of differing concepts and definitions, but from the organizational situation of education statistics units in ministries of education and institutional factors that limit or otherwise influence the process of providing sector statistics, indicators and for information for management. As in the preceding section, the following paragraphs are intended to provide a general perspective on problems of this kind.

Problems of Isolation of Education Statistics Units

There is a fairly widespread tendency for education statistics to cover only the data that come from within

the education system, often defined narrowly to include only formal public education provided by the national Ministry of Education. In some countries education statistics do not even include data that come from the education ministry's own budget and finance secretariat; they may not have easy access to the national Census Office in order to obtain essential data on population or such variables as literacy. While there are a number of exceptions, many education statistics systems do not actively incorporate data from external sources such as the Ministry of Finance or Treasury, Ministry of Labor or whatever units conduct household surveys. These external data on total national spending by sector, total and percapita GDP, employment and income data by education level, literacy rates and other context variables, are essential for creating a useful system of education indicators, and for any serious analysis of sector needs, problems or policy issues.

In some cases education statistics staff (often poorly paid and inadequately trained) resist strongly the idea of seeking data from outside the Ministry of Education and the school system itself. This not only limits the scope and usefulness of the data gathered and analyzed but means that the statistics unit has little understanding of the needs and interests of the "consumers" or "audience" for which the statistics are prepared. In one extreme case, an education statistics unit that is part of the Education Planning Secretariat has virtually no communication with its "parent" unit. Some directors of statistics have complained that their units and publications are ignored, while in other cases planners and policymakers complain that the data supplied by the statistics units are usually slow to be prepared and made available and of poor quality and little relevance for policy and planning tasks. In Paraguay, on the other hand, the Planning Secretariat has established a Public Information Office to help users of all kinds obtain the information they need, whether for school papers, research projects or policy analyses.

Lack of a Culture of Quantitative Analysis or of Evaluation

Ernesto Schiefelbein, in a study prepared for this project, holds that the weakest link in the chain between education statistics and policy decisions lies in the final stages of analysis and use of the information.[10] In this view, there is more information already available than analysts and policymakers actually use, for reasons having to do with lack of training, little experience in using analysis as a basis for decisions, and fear of the political consequences of revealing negative information. Along similar lines, Jeffrey Puryear has made the point that, if statistical information isn't very good, then policymakers don't find it useful, therefore a vicious circle develops, in which poor information and lack of demand for information results in lack of interest in or support of educational statistics programs.[11] In spite of major efforts with strong international financial support, such as the USAID-financed "BRIDGES" project of the Harvard Institute for International Development and other programs, decisionmakers in most LAC countries are not oriented toward using data and analyses as a basis for policy. In part this has to do with lack of experience and training; in part it is a function of the high turnover among senior sector officials and their advisors and second-level appointive officers (as both Schiefelbein and Puryear comment). And in part it reflects a natural reluctance on the part of political officials to hear bad news, or even to deal with analyses that yield anything less than perfectly clear and unambiguous findings. Another point of view arose in Paraguay, however, where statistics staff complained of lack of time and resources to carry out analyses of available data. Whatever the reason, the demand for sound information and policy analysis among policymakers in the LAC region is not strong.

Lack of Information on the Private Educational Sector

There is little information on education provided by the private sector. Some countries report only public enrollment and related data; others make an attempt

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[10] E. Schiefelbein, "Major issues and problems ???" Paper prepared for the education statistics projects, September, 1997.

[11] Puryear, Jeffrey M. "International Education Statistics and Research," *International Journal of Educational Development*, 15, No. 1, pp. 79-91.

to include private schools but data are often incomplete. There are problems of definition of semiprivate education, countries include categories such as *fisco-misional* and *particular subvencionado* in addition to fully-private paid schools (which are usually the elite schools).

Information on costs and finance in nonpublic education is especially difficult to obtain, making comparisons within countries impossible, to say nothing of regional comparisons. Information on parental contributions to education costs through tuition and other fees (or contributions to local school committees such as the *cooperadoras* of Argentina) are almost never available without a special study.

Problems of Federal Systems and of Decentralization

Argentina, Brazil and Mexico are federal countries with highly independent states or provinces. In some cases relations between the levels of government are poor, data are not reported, and provincial statistical units may prepare data that are not mutually compatible within the country. For a number of years Argentina was unable to report national figures for enrollment.

There is a widespread movement to decentralize or deconcentrate education systems and the statistics function is frequently transferred to lower governmental levels. Sometimes this raises problems, but it may offer an opportunity to obtain better information or to generate more interest in education statistics at lower levels of government. Provincial and state officials sometimes complain that they receive no feedback of information from the central level, but to overcome this problem, Brazil designed its new information system to supply useful information to its states and lower-level education authorities.

Most countries now use computers to tabulate and process education statistics, a major change from only a few years ago. This makes it possible for lower levels of government to input and carry out initial processing of education data and send the results to the center on diskette and, in some advanced countries, by electronic mail. There are, however, problems of providing adequate training to statistical staffs at lower levels in how to use computers and software.

Changes in Education Systems and in Statistical Procedures

A number of countries are undertaking educational reforms of greater or lesser magnitude. Where these involve major changes such as in the structure of the system, it may require a substantial adjustment in education statistics. (In Paraguay, for example, the official age range for primary school was changed but the enrollment in the relevant grades did not, causing a meaningless change in the figure for the enrollment ratio.) Other countries simply change their statistical procedures, sometimes to adapt to the use of computers; in other cases to gather new or different information. In such cases, forms must be changed, people at all levels must be retrained, and statistical series may become inconsistent between years.

Politics and Education Statistics Systems

Data on education are often highly sensitive, especially when they reflect problems, shortcomings or inequities within the system. Political officials, far from wanting to use empirical information to shape policies and programs, frequently prefer to suppress information. Education statistics offices are usually buried deep within the bureaucratic hierarchy and may be subject to political pressures either to withhold or to slant information. There is no tradition of autonomy of such statistics units.

As Schiefelbein emphasizes in his paper for this study, the rate of turnover in political leadership of education ministries is exceptionally high. Changes of ministers of education during a single political administration of four or five years are almost the rule rather than the exception. With every change at the top political level, all "positions of confidence" turn over, usually including the chief of planning and sometimes the top education statistics officer. This creates turbulence and lack of continuity and leadership and is a barrier to developing skill in interpreting and using statistics as guides for policy. Efforts to train statistics specialists, planners, policy

analysts and political leaders in developing and using education statistics are seriously undercut by rapid turnover.

Categories of Education Statistics
and Indicators

RATIONALE AND A PROPOSAL

An apparently simple but important step in improving education statistics and indicators is to establish categories in which to group the information. Setting up categories makes it possible to identify areas of weakness, set priorities and focus efforts to improve statistics and indicators. The following paragraphs examine some of the principal categorization models. In his recent work, *Indicators for Educational Planning: A Practical Guide*, Claude Sauvageot states: "If the 'analysis of functioning' aspect is predominant, the breakdown used is into costs, activities and results, supplemented by a description of the social and cultural environment. If one wants to classify by different entities, then one can use a breakdown of the type: schools, pupils, teachers costs.... One could also use groupings around major themes: the level of knowledge of pupils, preparation for the labor market, preparation for social life, the equity or democratization of education. One then measures the effectiveness or the efficiency of the education system in these four areas. But these are topics for cross-sectional analysis of indicators, rather than a logical way of presenting the document.... Finally, presentation in the form Resources/Activities - Processes/Results is no doubt the one that most facilitates the reader's analysis. It is the closest to an explanatory model of education systems.... One can add the characteristics of the sociodemographic environment that interact with each of the components.... In any event, the sub-classifications resulting from each method are very similar: the breakdown by level of teaching is always present, accompanied by analysis of costs."[12]

The OECD/INES system of education indicators, arguably the most developed in the world, has its own categorization scheme, which has been changing and evolving in the course of four editions of *Education at a Glance.* The organization of its 1996 edition into seven chapters corresponds fairly closely to Sauvageot's classification "by different entities," and to the eight categories that will be suggested below. Because of the differences between issues that are of interest in OECD countries and in LAC, however, as well as historical factors in the development of the OECD, its categorization system can provide important guidance but is not in itself an ideal model for the needs and interests of LAC.

In earlier years the OECD/INES indicators were grouped into three major categories: 1) "Contexts of Education," which included demographic context, social and economic context, and opinions and expectations; 2) "Costs, Resources and School Processes," including expenditure on education, sources of educational funds, participation in education, processes and staff (including variables on instructional time, school processes, human resources and staff, and educational R&D), and; 3) "Results of Education", including: system outcomes and labor market outcomes.[13] This corresponds to Sauvageot's Resources/Activities - Processes/ Results scheme. Although most of the indicators in the set remain the same, OECD has opted for classification by "entities."

This categorization scheme was developed to meet the needs of the countries of the OECD and the policy issues and questions in which policymakers and others involved with education have an interest. Norberto Bottani, then Director of the OECD/INES Project, and Albert Tuijnman wrote: "indicators are a potentially powerful tool for defining and interpreting relationships among the different aspects of education systems. However, they need to be

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[12] Sauvageot, Claude. Paris: UNESCO/IIEP, 1997. pp. 22-3.

[13] See OECD/INES, *Education at a Glance*, 1993 and 1994 (second and third editions).

organized into a framework that draws attention to their interrelationships."[14] Bottani says of the original categorization scheme or "three clusters of education indicators"used by the OECD: "Within each cluster several indicators have been proposed and methodologies developed for measuring them. However no indicators have yet been calculated for certain important elements of the framework, such as attitudes and expectations of consumers of education services, education staff characteristics, the attained curriculum, and the time students spend learning in the classroom. ...The framework so far developed serves primarily a pragmatic purpose. It provides, in simplified but systematic form, comparative information on what are widely agreed to be significant features of education systems and their contexts, and on a selection of pervasive issues which arise through their functioning and development. Because many topics, however important, seem to evade straightforward quantification ... the framework is necessarily incomplete. It will be superseded in the future as understanding of education and society evolves and improvements in data sources take place."[15]

The fourth edition of *Education at a Glance* is organized into seven chapters, dealing with: 1) context; 2) costs and human resources; 3) access, participation and progression; 4) school environment and classroom processes; 5) graduate output (including tertiary level); 6) student achievement and adult literacy, and; 7) labor market outcomes, which include both employment and earnings information.

UNESCO's World Education Report is organized according to eleven extensive tables. The first two of these present statistics and indicators on population, GNP, literacy and other context variables. Tables three through six cover education levels from pre-primary through secondary and table seven deals with teaching staff at these levels. Tables eight and nine

present a variety of information about third-level education. Tables ten and eleven are mainly dedicated to information on public expenditure on education, although table ten includes series on private enrollment.

SIRI's *Condition of Education* presents 48 indicators, some of which could be utilized directly in a region-wide system of indicators if brought up to date. The SIRI indicators have some shortcomings, however, as will be discussed in later sections, and they are essentially not organized into categories.

The Association for Development of African Education (DAE) financed the development of a "Statistical Profile of Education in sub-Saharan Africa" (SPESSA). The SPESSA system is described as a "profile" rather than purely a system of indicators, since it includes both basic statistics and indicators. It is divided into four sections that are, in a sense, categories. These include: 1) "Country Information" (which corresponds to the OECD's "context" category); 2) "Education Data" including basic statistics on total enrollment by level and total number of schools; 3) "Education Indicators," including enrollment ratios and student-teacher ratios, and; 4) "Education Finance". Much of the initial work in designing the system and obtaining the basic data was carried out by the World Bank in connection with sector policy work for the African region. Further development of the system was financed from DAE core funds. The U.S. Agency for International Development financed development of software that made it possible to display the data in a variety of ways. Development of the interactive software was carried out by the Institute of International Research and Potomac Interactive Corporation. This software is now essentially in the public domain.

At the level of individual countries, the study has ound that there are fairly well-developed systems of indicators in some countries of the region, including Mexico, which has adapted its indicators to the OECD model, and Brazil, which has based its excellent new system heavily on the OECD model but made certain changes. Neither of these, however, constitutes a fully satisfactory categorization of education indicators for use in Latin America and the

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[14]   Norberto Bottani and Albert Tuijnman, "International Education Indicators: Framework, Development and Interpretation." Chapter 4 in OECD/CERI *Making Education Count: Developing and Using International Indicators*. Paris: OECD, 1993, p. 31.

[15]   Ibid

Caribbean.

Many countries do not have systems of indicators. Among those that do, the most frequent shortcomings is their omission of whole categories of information especially on internal and external efficiency, sector costs and finance and indicators of outcomes, quality or results. Some countries, such as Chile have fairly complete systems of education indicators but their categorization schemes are idiosyncratic and none could be considered a model to be applied throughout the hemisphere.

Although the main purpose of this study is the diagnosis of present education statistics systems, a set of categories will make it easier to talk about the present state of the art. It will also serve as a starting point for considering what needs to be done in future stages of the program to improve education statistics in the region. With these objectives, the study proposes the following set of categories.

Context: In this the categorization follows the OECD model, although the content of the category is limited to the socioeconomic and demographic context (including literacy levels) and excludes the attitude/ expectation indicators of the OECD context category.

Participation: This includes indicators based on enrollment that are referred to as "participation" indicators by the OECD. This is where the basic indicators of gross and net enrollment ratios appear, as well as age/grade relationships.

Teachers: Teacher numbers and characteristics, education and qualification levels, and student-teacher ratios are included here. It would be desirable to be able to differentiate classroom teachers and possibly directors from other staff, and to include variables and indicators such as teacher compensation and teaching time, insofar as it is possible to obtain such data.

Schools and Nonteacher Inputs: This category has three major subdivisions: 1) data on establishments, which do not necessarily correspond to school buildings; 2) infrastructure, and; 3) nonteacher inputs, which include availability of textbooks and

teaching materials and possibly other inputs such as libraries, science laboratories and computers. The development of powerful school mapping methodologies in some countries in the region suggests that it may soon be possible to link all these subdivisions, as well as information from other categories, in ways that will be useful for policy and planning. In the meanwhile the category includes indicators relating to numbers and distribution of establishments and the adequacy and physical condition of school buildings, as well as limited information available on nonteacher inputs.

Internal Efficiency Student: flows, repetition, transition ratios at the end of major levels of education and cohort survival rates would all be considered in this category, although it is an area in which difficulties of conceptualization and definition are pervasive.

External Efficiency: This is a category that is largely absent in most national education statistics systems, although it is of fundamental importance for both national and regional policy considerations. It includes: 1) income levels associated with different levels of education; 2) relationships between employment and education, and; 3) economic rates of return.

Sector Costs and Finance: Again, indicators in this category are largely absent from present systems, in spite of their obvious importance. The OECD system has devoted a great deal of attention to developing and defining its financial resources category, including public and private sector expenditures and sources of funds. OECD has developed special questionnaires with detailed explanations for their completion. In this area this study recommends taking advantage of the solid foundation established by the OECD.

Results of Education-Student Learning: Within the OECD grouping called "results" are indicators of student outcomes including test-based achievement indicators, and system outcomes, which include graduation rates, degrees granted, and labor market outcomes. This is a challenging category; one in which existing statistics in LAC are notably weak. It is an area of obvious importance and one in which a

great deal of work remains to be done at the country level and in terms of conceptualizing indicators for regional comparisons. The Latin American Laboratory of Education Quality Evaluation, supported by The Ford Foundation and the Inter-American Development Bank, and based at UNESCO-Santiago, is advancing efforts in its participating countries to fill this major gap in knowledge.

This does not presume to be a final or "correct" grouping of indicators. As Bottani points out, even the OECD system is still incomplete and subject to change. The proposed categorization is pragmatic, in that it corresponds to current data availability. It has "face validity" and would seem to meet the present needs of the countries of the region at this time.

As a general comment: in every category, where appropriate and feasible, indicators should cast light on equity considerations. That is to say, they should reflect not only totals but also relationships by gender, rural/urban location, ethnicity in some cases, as well as public and private support.

The first four categories correspond to a considerable degree to the "traditional" education information gathered and published in most countries of the region, and indeed the world. For the most part data are available to permit calculation of a fairly full set of indicators in each of the four. Indeed the SIRI system and *The Condition of Education* include many of the indicators proposed, although there are problems such as lack of age data that permit calculating net enrollment ratios, differences in years for which data are reported, and lack of clarity of concepts and definitions.

It is in the last four categories (internal and external efficiency, costs and finance, and results) that the difficulties and challenges are greatest. In part the difficulties arise from the general problem of isolation of education statistics systems from sources of information outside the school system itself. Although the economic, demographic, employment and other data needed to calculate such indicators exist, they are often not incorporated into the sector's statistics systems. (Clearly there are exceptions to this statement.) In part, however, the problems stem

both from lack of information—as in the case of quality and outcome data—and from intractable problems of concept and definitions. These range from methodological differences regarding measurement of repetition rates to virtually philosophical problems of what constitutes quality, or what abilities an upper secondary school completer should have (to say nothing of the difficulty of measuring and comparing such abilities).

As Bottani has indicated in the case of even the well-developed OECD system, a great deal of work remains to be done. Even the OECD's indicators in areas corresponding to the last four categories above are limited and less than fully satisfactory. It should be possible, however, to make a valuable start, developing fairly full and fully agreed-upon indicators in the first four categories and at least some indicators in the last four. At the same time it would be possible to undertake efforts to provide data that are not available now, and to achieve consensus on conceptual issues regarding a steadily-expanding set of indicators.

Many years ago, economist Walter Williams drew a distinction between "macronegative" and "micropositive" information.[16] Macronegative information shows "the dimensions of major problems in broad areas" while micropositive information indicates "what would work in a program." To a considerable extent international indicators are necessarily limited to the macronegative realm, while national systems of indicators (and specific policy research) can move more in the direction of micropositive information. Indicators that identify problems can be highly valuable in terms of drawing attention to them and raising the awareness of political officials and the general public of the need to improve education. An important example in LAC has been the development of a feasible system for estimating minimum levels of repetition, which showed the problem to be far greater than indicated by data based on the usual methodologies for measuring this variable. As a

16 Williams, Walter, *Social Policy Research and Analysis: The Experience in the Federal Social Agencies*. New York: Elsevier, 1971, p. 7.

result, sector officials in many countries became more aware of this problem, and of the need to improve quality and attempt to reduce repetition.

A REVIEW OF THE STATUS OF EACH CATEGORY AND RECOMMENDATIONS FOR A BASIC SET OF INDICATORS

Using the categories set forth above, the following sections consider the state of the art of education statistics and indicators in each category, some of the key problems and challenges that arise in each category, and examples of good practice within the LAC region and in other regions. For each category, the study makes recommendations about a limited set of indicators that might feasible be put into use in LAC in the near future. These are summarized in Annex 3-1 at the end of this chapter.

Four points must be emphasized concerning these categories and the indicators recommended in each:

C   These are suggestions or recommendations; they are not intended to be imposed on any country of the region.

C   They are based on information from the country and consultancy studies as well as information about other systems of indicators, but are far from a definitive statement about an ideal system for LAC.

C   Experts will almost certainly disagree with the proposed categorization scheme and with the suggested indicators, and such disagreement and debate can serve to promote greater understanding of and improvement in education statistics and indicators in the region.

C   These recommended indicators are presented to serve as a starting point for further debate, leading to consensus on a regional system of indicators and continuing developmental work to extend and improve the set of indicators.

Context

National systems of education statistics do not usually provide information on the context of the system because the nation's economic and social situation should already be well known to all within-country users. Chile, for example, has one of the best-developed systems of indicators of any LAC country but it includes no context indicators as such. It is only in systems such as the OECD indicators that are designed for international comparisons that the need arises for basic data on countries and factors that influence their education systems.

The 1996 version of the OECD's *Education at a Glance* has a first chapter called "Demographic, Social and Economic Context of Education" which includes "Educational Attainment of the Adult Population," "Gender Differences in Educational Attainment of the Adult Population," information on the "young population" and "Rates of Labor Force Participation by Level of Education Attainment." Earlier editions had more extensive context information, including "Unemployment among Youth and Adults," and "National Income per Capita" as well as a sub-category called "Opinions and Expectations" with seven tables based on responses to attitudinal questionnaires administered to samples of respondents. UNESCO's World Education Report dedicates its two first tables to "Population and GNP" and "Literacy, Culture and Communication."

The category corresponding to context in the SPESSA profile is called "Country Information" and covers total population, age structure and rate of population growth; area; GNP per capita in dollars and the rate of growth of GNP per capita; life expectancy, total fertility rate and infant mortality rates; languages and ethnic groups; major imports and exports, natural resources, agricultural products and major industries. Information on literacy, including literates as a percent of total adult population and by gender, appears within the category called "Education Data."

UNESCO-Santiago's SIRI system includes tables presenting demographic indicators; economic effort", which includes GNP per capita and its rate of growth; general economic indicators, including agriculture as a percent of total GDP, external aid received, and external debt; labor force and degree of urbanization; and two tables on mass media (newspaper circulation per 1000 population, radio and television receivers per 1000), and indicators of

quality of life, which focus on health variables. Many of SIRI's 48 indicators, especially the context variables, are derived from other secondary sources such as the World Education Report, the World Bank's World Development Report and a variety of publications from ECLA, UNDP and other sources. For this reason they are always considerably out of date, but such variables are not highly volatile, and in a system that is only updated every three or four years, this is not a serious problem.

While all of the above indicators of the context in which education systems operates provide interesting insights, none is a perfect model for a regional indicator system designed to be updated annually and to provide essential information for international comparisons. This study proposes the following set of context indicators, which draws in part on other models.

C   Population, average rate of population growth, and school-age population (ages 5 through 24 or the closest feasible approximation) as a percent of total population.[17]

C   Gross domestic product per capita and average annual rate of growth of GDP per capita over the past five or more years.

C   Literacy rates, total and by gender, in the population aged 15 and older (with indications by country of what literacy criteria are used).

C   Average years of schooling completed among the population aged 15 and older, total and by gender.

C   Structure of the education system and official school-starting age.

Obviously it would be possible to augment this parsimonious list, but it constitutes a minimum-adequate starting point to which countries or subregions could add other indicators as their special interests warrant. Information on employment by education level would be included in the external

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efficiency category.

Students and Participation

The OECD/INES system uses the term *participation* to cover all aspects of enrollment and enrollment ratios. It limits participation to enrollment in formal education. The term is preferable to *access* or *coverage* and avoids some ambiguity associated with the term *escolaridad* in Spanish.

Calculation of gross enrollment ratios requires data on school-age population, which calls for census data on population by single-year age group. CELADE publishes projected estimates of population by single-year age group every four or five years but does not include the countries of the Caribbean.

Calculation of net enrollment ratios calls for enrollment data by age and grade. This is much more difficult to obtain. Data have been made available periodically for use in calculating national repetition rates using the SMMG model but these must be based on estimations or sample studies in some countries and it is difficult to obtain such data on an annual basis. *The Condition of Education* presents tables on school-age population and enrollment by single-year age groups and net enrollment ratios, based on a special survey conducted in 1992, plus single-year population estimates from CELADE. The data are for 1991 only (except for countries of the Caribbean, where they are for various earlier years) and the survey has not been repeated. It would be highly desirable if the countries of the region were to provide data on enrollment by age by grade, even if this had to be based on some form of estimation or on sample studies.

Joao Batista Gomez Neto, Director of Brazil's Department of Educational Statistics, is reportedly developing a method of estimating net enrollment ratios without the need for age/grade data. Philip Fletcher has indicated that this would be based upon the usual school statistics reports, without age/grade data, plus estimates of transition rates at various points. No additional information is available at this writing.

The SPESSA indicators include gross enrollment ratios for the primary and secondary levels of

schooling. They do not provide net enrollment ratios.

An indicator that has received some attention in LAC is rate of admission, meaning the rate of access to the first year of primary school. The UNESCO-sponsored Regional Workshop in Education Indicators (January, 1995) recommended that this should be included among a set of participation indicators. Gross admissions would be total new entrants to first grade divided by the population corresponding to the official age of admission. The net admissions rate would be based on new entrants of the correct age divided by population of that age. There would be difficulty obtaining the data necessary to calculate this indicator and it would be preferable, in the writer's view, to devote the effort to obtaining age/grade data that would make it possible to calculate not only admissions but also net enrollment ratios and cohort progressions.

Other indicators of access are the rates of transition from the last grade of the primary level (ISCED 1) to the first grade of the lower secondary level (ISCED 2), and from the last grade of that level to the first grade of the upper secondary level (ISCED 3). These ratios might be considered aspects of internal efficiency but in fact they reflect more than repetition and dropouts between years within an education level and are quite rich in content relating to participation and access. Accurate measurement of transition rates requires identifying new entrants to the next higher level, both from the preceding school year and those who may have *stopped out* for one or more years before entering that level and separating these from repeaters. SPESSA includes transition ratios (total and by gender) from primary to the lower secondary level in its education indicators.

Some countries measure enrollment at the beginning and the end of the school year (which makes possible a calculation of within-year dropouts). It will be important to reach agreement that the enrollment figures used in calculating enrollment ratios all correspond to the same stage of the school year, probably the beginning period.

Within the sixteen country/state/province sample, seven countries present information on gross enrollment ratios; six countries provide data on net enrollment ratios. Several other countries gather the basic data to provide these indicators but do not include them in the information published.

Chile and the province of Mendoza in Argentina have initiated or plan to initiate systems of individual student records, which would provide a basis for accurate measurement of net enrollment ratios and other indicators such as cohort survival rates, but such systems will not be widespread in the region in the foreseeable future. Using such data would require considerable computational capability.

This study proposes the following minimum-adequate set of indicators of participation:

C   Gross enrollment ratios by level, including tertiary, by gender (and by urban/rural region if possible).

C   Net enrollment ratios by level, by gender (and by urban/rural region if possible).

C   Transition ratios from primary to lower secondary to upper secondary (ISCED 1 to 2 and ISCED 2 to 3).

C   Transition ratio from secondary (ISCED 3) to tertiary level.

Including data on cohort progression through the school system would be highly desirable in the long run but is probably not feasible in most countries at the present time.

Calculating pre-primary enrollment ratios raises the problem of major differences in the range of school age population used in the denominator. Moreover, since enrollment of children two or three years younger than the official school-entering age is very low, an indicator based on a school age population spanning three or four years would yield a misleadingly low figure. A suggestion would be to use a figure for enrollment in the last year before entry into primary grade one, divided by the population corresponding to that age. *The Condition of Education* includes two tables on pre-school enrollment, which includes information on private

enrollment. This includes an enrollment ratio based on total enrollment divided by the population aged zero to five. SIRI also provides information on total pre-primary enrollment in public and private schools and percent of enrollment in urban and rural areas. Comparing percentages of total preschool enrollment and 0-5 population in urban and rural areas, SIRI also calculates an indicator of underenrollment in rural areas (percent rural enrollment divided by percent of population that is rural) called an *index of inequality*.

Tertiary enrollment ratios present similar problems because many countries do not even have an official duration for tertiary education and use an arbitrary (and very long) age range such as 18 through 27.

The OECD distinguishes between participation in formal education and "continuing education and training for adults." The 1996 *Education at a Glance* has modified this indicator to focus on job-related education. *The Condition of Education* includes a table showing total enrollment in adult education and by various categories: formal and nonformal, literacy classes, continuation classes and vocational training. There are many gaps in the data for Latin American countries and almost no data for the Caribbean region, thus no indicator in this area is suggested.

Staff: Teachers, School Directors and Other Staff

Indicators pertaining to the teaching force present a number of difficulties. Definitions of classroom teachers versus other administrative staff are unclear, few countries convert the total number of teachers employed to full-time equivalents (FTE), and specification of levels of training and education varies greatly between countries, to cite some of the major problems found in the countries studied.

Education at a Glance has reduced the number of indicators relating to teachers and other staff and changed their content. Now Chapter 2 on "Costs and Human ... Resources" includes "Staff Employed in Education" and "Ratio of Students to Teaching Staff." Chapter 4 on "School Environment and School/Classroom Processes" includes "Statutory Salaries of Teachers," "Teaching Time" (statutory hours required) and "Stability of Primary School

Staff," as well as indicators relating to "School Leadership" and "Teacher Cooperation" drawn from analyses of questionnaire-based studies in member countries. Such in-depth studies of teaching and leadership reflect the way the OECD indicators probe areas of special interest from time to time. They make possible a kind of large scale, international policy analysis. They are, however, unlikely to be feasible in LAC in the short to intermediate run.

The World Education Report presents two teaching-related indicators in its Table 7: pupil-teacher ratios (from pre-primary through secondary) and percentage of female teachers.

SPESSA includes total number of teachers at primary and secondary levels and the proportion of female teachers, and primary and secondary student/teacher ratios. *The Condition of Education* presents information on: total number of teachers, urban and rural, public and private, gross student/teacher ratios (public and private and urban and rural), percentage of teachers with professional training, and classroom teachers by public and private schools and urban/rural area. There are frequent data gaps in many of these tables.

Although research on effective schools shows that school heads or directors play a highly important role in promoting educational quality, no regional system of indicators reviewed for this study includes any information on school directors. Only a few of the countries studied include any variables on school directors.

A suggested set of indicators in the area of teachers and staff would include the following:

C Total teachers and percent teaching in public and private schools and in urban and rural areas.

C Total classroom teachers and relationship between classroom teachers and total staff.

C Percent of teachers who meet national standards for training: total, public and private, and urban and rural.

C Ratio of students to total teachers by level of education (excluding tertiary), total, public and private, urban and rural.

C Average teacher's salary (measured at some agreed point such as after ten years of experience, including basic salary and additions) as percent of GDP per capita.

Considerable work will be needed to obtain agreement among countries of the region on the concepts and definitions to be used in calculating these indicators. As a general observation, SIRI has found that few of the countries of the Caribbean provide any data on teachers. In this as in other areas, it will be important to learn why this is the case and attempt to overcome it.

Schools and Non-Teacher Inputs

This category of indicators includes more varied bodies of information than any other category. It covers establishments (not school buildings), physical infrastructure, and can include inputs such as textbooks, teaching materials, computers, libraries, laboratories and similar inputs.

Virtually all national education statistics systems include data on establishments. In most cases these indicate the total number of establishments by source of support (public, private and mixed), and in others by urban/rural location and other breakdowns. Some include average enrollment per establishment (or per class). *The Condition of Education* includes tables of indicators showing the number and percent of establishments by source of support and urban/rural location for pre-primary and primary levels.

A separate sub-category of information pertains to school buildings: their number, distribution by area, ownership, physical capacity and condition. A single building may house multiple establishments, as for example when there are two or three shifts per day, or when a primary school building provides space for one or more pre-school classes. This information is useful for planning and development of projects to improve infrastructure, and is linked in some cases to systems of school mapping. In some instances the basic data comes from periodic surveys of physical infrastructure; in others from regular annual reports from the schools. In the former case the information may be highly detailed, giving dimensions, type of construction, areas devoted to classrooms and administration, number of toilets, physical condition of buildings and dependencies, the probable cost of repairing buildings that have deteriorated, and similar variables. If the data are supplied by the schools themselves, they are usually limited to number of classrooms and a few other variables. CELADE has developed a system for unique identification of every school building using a satellite geo-positioning and relating the school buildings to census data on population. Paraguay has developed a very advanced school mapping system based on this technology, with financing from an IDB education project. Nicaragua's education statistics include an indicator of the average square meters of constructed area per classroom at primary and secondary level and the average number of students per classroom.

The third sub-category pertains to inputs into the teaching and learning process that are available in the schools. The term *inputs* may apply to infrastructure and special facilities such as libraries or science laboratories, to teachers, texts and teaching materials, or to time available for instruction. In most cases teacher information is included in the preceding category and instructional time, if included at all, appears in the Context category. Since research indicates that access to textbooks is a highly important factor influencing student learning, it would be highly desirable to have information on the proportion of students having access to textbooks (or the number of textbooks per child, in situations where these are better-supplied). This datum is usually only available from special research studies, often based on samples of schools.

While national systems usually include information on infrastructure, this study has not found a system of international indicators that does so. The study suggests the following basic minimum set of indicators in the category of schools and inputs:

C *Establishments*

- Number and percent of establishments by level of education, by source of support and

by urban/rural location.
- Percent of primary-level establishments in multiple-shift schools.

C *Inputs*

- Duration of the school year in hours, and curriculum hours devoted to language, mathematics, natural and social sciences.
- Average number of textbooks available to each child, by source of support and urban/rural location.

Internal Efficiency

Lack of indicators of student flows that provide reliable information on repetition, dropouts and other variables has been one of the weaknesses both of national education statistics and of international systems of indicators. Efficiency indicators are more complex and less readily-measurable than the more traditional statistics on enrollment.

The third edition of *Education at a Glance* included indicators of transition characteristics from secondary to tertiary level within their "participation" category but no other indicators of student flows. The fourth (1996) edition omits these indicators. Consultant Jesus Ibañez, in his study of the OECD indicators and their application in Spain, suggests that this is because education through the secondary level is compulsory in most member countries and repetition is relatively low. Internal efficiency in terms of student flows is not of as great interest as it is in LAC.

SPESSA includes "Repeaters as Percent of Total Enrollment" for both the primary and secondary levels. SIRI's *Situacion Educativa, 1980-1994* includes a table showing 1) the average highest grade approved; 2) the average number of years attended; 3) average years required to be promoted one grade, and; 4) repetition rate in first grade and for six grades of primary, cost per student in U.S. dollars, and a column showing the total cost of repetition in each country in millions of dollars. The calculations are for 1991. The table is based on data from the UNESCO Statistical Yearbook as well as other data in SIRI's information base, plus use of the

Schiefelbein/SMMP model.

The Condition of Education also includes one table presenting percentage of total enrollment who are repeaters for grades one through nine, for virtually all countries of Latin America and the Caribbean. This table covers only 1990 and is based on information from the Education Statistics Division of UNESCO-Paris and calculations using the Schiefelbein/SMMG model. On one hand it shows that it is feasible to obtain data on these variables; on the other, such information is not regularly available and letting together such a table requires a special effort.

One of five categories in Brazil's new education information system is called *efficiency*. It presents four indicators of *productivity*, including rates of passing and failing, dropout or abandonment rate and a summary indicator of productivity. There are three indicators of transition ratios between levels and four indicators of *internal efficiency*: average years students remain in the system, average number of years to complete each level, and percent of students who graduate by area of specialization.

Nicaragua has specified an admirably complete set of eleven indicators of internal efficiency. The eleventh of these is called *analysis of flows* and is itself divided into fourteen fine-grained indicators of how many students of each initial cohort reach and complete different grades. Other flow indicators analyze the number of student-years necessary to produce completers of different levels, the input/product relation, the number of years required on average for a student to complete a cycle, the average number of years that dropouts remained in the system, the rate of dropout or wastage, and a coefficient of efficiency based on the theoretical number of years required for a cohort to complete basic education divided by the total number of student years actually spent in producing a cohort of graduates (including repetition and years dropouts spent in the system.)

There are a number of concepts that arise in connection with indicators of internal efficiency, as well as a variety of terms for describing the same concept, and considerable confusion exists. There is confusion about concepts such as passed

(*aprobado/promovido*), failed (*reprobado*, repeater, dropout/wastage/*abandono*), *desgranamiento*, average-years-to-complete, transition ratio, or cohort survival (within time allotted and eventual). The term *efficiency* itself is subject to various interpretations, and such mind-twisters as *productivity* call for a clear, preferably mathematical definition and agreement on terminology (in LAC this will mean in three languages).

Moreover the method of measuring these concepts, especially repetition, is a major source of difficulty and controversy. Traditional education statistics usually have not included data on age of students enrolled. They usually measure repetition by asking children if they are repeaters, or on the basis of school records, or based on the teachers' memory from the preceding year. Even with the best efforts, such methods miss children who fail in one school and enter the same grade in a second school as new students rather than repeaters. Methods such as the Schiefelbein/SMMG model, which estimate the minimum amount of repetition that must exist to explain the difference between net and gross enrollment ratios, indicate clearly that traditional measures of repetition understate its magnitude. But experts disagree, sometimes very strongly, about the correctness of such methods. (And this model is only useful for calculations at the national level, not for comparisons between areas within countries.) As noted, the OECD does not include efficiency indicators as such. It is an area that cries out for clarification and consensus.

Recognizing that internal efficiency is an area fraught with difficulty, this study proposes that countries be encouraged to gather information on students' ages and age-grade relationships (even if this must be done on the basis of sampling rather than universally). If reasonably reliable age/grade matrices are available, it would be possible to calculate the indicators of repetition and dropout rates by level of education.

Ultimately it would be desirable to be able to trace the progression of each cohort through each grade, identifying repeaters (first, second through nth time) and dropouts, making it possible to calculate what portion of each cohort eventually complete each cycle, how long it takes for them to do so, and

meaningful measures of *productivity* and *efficiency*. Nicaragua has shown that this can be done. It is an end toward which the countries of LAC can aim, but only a few polities such as Chile, Nicaragua and the province of Mendoza could presently achieve it. For the present it would not be realistic to propose this as an efficiency indicator for application in all countries.

External Efficiency

The concept of external efficiency, meaning how adequately education systems prepare their graduates for the world after they leave school, has been used for over thirty years. Yet few systems of national or international education statistics include any indicator in this category. The usual external efficiency data are income levels associated with different levels of educational attainment, rates of employment by education level, and economic rates of return (social and private) that bring the element of cost of schooling into the calculation. All of these require information from outside the education system itself, usually obtained from censuses, household surveys and labor or employment surveys.

The OECD/INES indicators include a sub-category called *Labor Market Outcomes* which has evolved over the years. The fourth (1996) edition includes: 1) "Unemployment and Education" (unemployment rates by level of education completed); 2) "Youth Unemployment and Education"; 3) "Education and Earnings from Employment" (an index of earnings by education level in comparison with earnings for those completing upper secondary level, for men and women); and 4) a special indicator of "Unemployment Rates of Persons Leaving Education", focusing on youth who have recently left school. The 1995 edition included *Educational Attainment of Workers*. These data tend to be available with a considerable time lag, and not always for the same year. OECD/INES seems to be unique among indicator systems in including any indicators of external efficiency.

Many if not most countries in Latin America and the Caribbean have national household surveys or labor surveys that provide information on income and employment by education level, although underlying definitions and the methodology used in gathering the

data differ considerably between countries. It should be possible, however, to develop meaningful indicators of income by level of education attained, even if only in comparison with GDP per capita, and of employment by education level.

Although studies of rates of economic return to education have been carried out in many countries of the region, they have not been undertaken frequently and differed in methodology and coverage. As a result, the data tend to be some years old and not fully comparable. George Psacharopoulos has developed a shortcut method using starting salaries associated with different education levels rather than the more difficult to obtain data on age-income profiles. Psacharopoulos includes rate of return data (using the full method) for 19 countries of LAC in one recent study.[18] With Y. C. Ng, he focuses on 18 countries in Latin America, explaining the full, shortcut and Mincerian methods and showing returns by gender to education using the last of these.[19] It would appear that, using this methodology, it would be feasible to include an indicator of rate of return for countries that have household surveys that include data on salaries and education levels of recent entrants into the labor force. Analysis of rates of return to education have been carried out since the early 1970s but are still controversial. A full discussion of their merits would go far beyond the scope of this study. In the author's view it would be desirable to include them in the set of indicators.

Suggested indicators in the category of external efficiency include:

C Income of employed workers by level of education, by gender.

C Percentage of the labor force employed, by level of education attained, by gender.

C Social and private rates of economic return by main education levels (separating vocational/technical education from general secondary if possible), by gender.

Education Sector Costs and Finance

Many of the countries studied have no indicators of sector costs or finance. This may be a function of a general finding of this statistics study: that many education statistics offices are isolated from other sources of information, including the budget offices of their own ministries of education, and focus almost entirely on the data that come from the schools themselves. In any event, this is a category of indicators in which there is a great need for leadership and additional work.

The OECD has made major advances in this category of indicators and has probably the most sophisticated series of education finance indicators of any regional organization. Chapter 2 of the 1996 *Education at a Glance* presents indicators of educational expenditure relative to GDP, expenditure per student, the degree to which countries have inter-regional disparities in expenditure per student (covering seven countries), expenditure by resource category, public funds by level of government and proportion of public expenditure spent on education. Expenditure by resource category breaks the total down between recurrent and capital expenditure and between staff compensation and nonpersonal resources. The analysis by level of government is highly important in federal countries. The 1995 edition divided these into two sub-categories: expenditure on education and sources of educational funds. It is intended that both public and private expenditures be included in these indicators, although data on private spending are not available from all countries. The 1995 edition separated funds from public and private sources.

The OECD continues to refine and deepen its indicators in all categories, including sector finance. With the advice of consultant Steven Barro, the organization published a document titled *Definitions, Explanations and Instructions* to accompany the two data-gathering instruments it uses in this area. This document, based on extensive study and the experience of the countries of the OECD, goes into

[18] Psacharopoulos, G. "Returns to Investment in Education: A Global Update," in *World Development* (Vol. 22. No. 9, pp. 1325-43). Great Britain: Elsevier, 1994.

[19] Psacharopoulos, G. and Ying Chu Ng, "Earnings and Education in Latin America." *Education Economics*, Vol. 2, No. 2, 1994, pp. 187-207.

considerable detail on how to deal with issues such as types of education that cross the boundaries between ISCED categories, the distribution of expenditures not allocated by level, treatment of funds from private sources, recurrent and capital expenditures, transfer payments, household expenditures and the like. It is an invaluable reference for all who are developing systems of indicators of education cost and finance.

UNESCO's World Education Report has two tables presenting expenditure data. Expenditure as a percentage of GNP and education expenditures as a percentage of total public expenditure appear in Table 10. Table 11 breaks down public recurrent expenditure (a variable more readily available than total expenditure) to show teachers emoluments as a percent of total and distribution by level of education. It also shows recurrent public expenditure per pupil, by education level, and as a percent of per capita GNP. The last indicator is rich in content, and is available for most of the countries of South America (but with many gaps of Central America and the Caribbean).

UNESCO-Santiago's *Condition of Education* includes some indicators relating to sector finance and costs (Tables 42 and 43), many of which are derived from the World Bank's *World Development Report* and the World Education Report. These include only a few of the most important indicators — public spending on education in relation to GDP, for example—the data are not available for many countries, and there are problems of definition, differences in the years for which the data are available, and other factors affecting the comparability of the data. CEPAL and other organizations publish some education cost and finance data, but in the LAC region this category of statistics and indicators is one in which there is a serious need for more and better information.

One exception to this statement is in Brazil, where the new information system has adopted many of the OECD indicators and the methodologies associated with them. Brazil has indicators of: public expenditure on education as percent of GDP, education's share in total public expenditure, expenses by level of education, expenditure per

student per year, per-student expenditures in relation to GDP per capita, and other indicators specific to that country's federal system of education finance.

While most countries of the region are far from Brazil's situation, the data necessary to calculate many of the indicators should be available without great difficulty (the main exception being data on private sector contributions). It will be necessary to establish a clear set of definitions and guidelines for gathering the data and calculating the indicators. With that caveat, the study recommends the following set of indicators of sector costs and finance:

C   Total, public and private expenditures on education as a percent of GDP.

C   Public expenditure on education as a percent of total public expenditure.

C   Expenditure by level of education and by public, private and mixed source of support.

C   Public expenditure per student per year (recurrent only; recurrent plus capital) by level of education.

C   Recurrent and capital expenditures.

Results of Education: Student Learning

The final category of indicators deals with the outcomes or results of education, specifically with how much students have learned in the course of their education. In Latin America, this is often called "measurement (or evaluation) of educational quality". Information in this area is necessarily based on one or more of several kinds of tests.

To some observers this is the only category of indicators that is important. In the minds of others, however, there are serious doubts about whether it is possible to measure the outcomes of education, or if it is possible, whether outcomes should be measured and for what purposes the resulting information should be used. It is, to say the least, an area fraught with controversy. This study proceeds from the assumption that it is feasible to measure at least some of the outcomes of education, and that it is important

to do so. But a number of important and controversial questions remain about what to measure, how to measure it, and how to present the resulting information in ways that will be useful for different audiences, both national and international.

British Commonwealth countries of the Caribbean have a long tradition of testing and usually publish statistics on outcomes. Jamaica, for example, publishes extensive information on examination results that make possible many intra-country analyses and comparisons, while the OECS sub-regional system of indicators includes a *Student Performance* category giving grades obtained by subject/course-of-study, by level, and the percentage of those who entered for exams who passed. For many years, however, most countries of Latin America (as distinguished from the Caribbean) did not have systems of standardized testing. Opposition to testing had bases in ideology and educational philosophy, apprehension about what the results would show or how they would be used, lack of technical capability to establish a testing system or of financial means to cover its cost, or simple lack of knowledge. This situation has changed greatly in the last decade, although the term *evaluation* is still widely used instead of *testing* because of the strong feelings against standardized tests. For some time, countries such as Chile and Costa Rica have had national testing systems for sometime, while others such as Argentina and Brazil have been experimenting or moving in the direction of establishing them. Now, sixteen countries that have testing systems are participating in the Latin American Laboratory of Educational Quality Evaluation, which is based at UNESCO's Regional Office for Education in Santiago and has received support from The Ford Foundation, the Inter-American Development Bank and UNESCO itself.[20]

A paper prepared by Arancibia and Segovia for the Laboratory provides a descriptive review of the systems of quality measurement in the participating

countries.[21] The points raised in the paper point out some of the serious issues and questions involved in establishing indicators of educational quality or learning outcomes in Latin America. It is important to clarify that there are two areas in which questions arise: 1) questions about what sort of testing system would best meet each country's needs for information about educational results, and 2) issues and challenges involved in creating internationally comparable indicators of student learning. The following paragraphs, drawn from Arancibia and Segovia, present in very brief form some of the major questions concerning national testing systems; and add observations on what these questions imply for international indicators of quality or results.

C   What purpose will the tests serve? The tests can be used to select students for admission to the next level, certify student learning, monitor learning trends through time, evaluate policies or programs, inform schools and subnational regions about their students' learning, diagnose individual learning problems or needs, or some combination of these. Only a few testing systems such as the one designed by the International Association for the Evaluation of Educational Achievement (IEA) are designed to permit international comparisons of student learning, and the IEA has not been widely applied in LAC.

C   What areas of learning will be measured? Virtually all countries that test measure learning achievement in the national language and mathematics, but most include one or more other academic disciplines and there is a wide array of additional topics that are tested, including foreign language ability, self-esteem, environmental awareness, *socioaffective* abilities and other topics. Some countries include questionnaires about the school and its teachers, or about individual students' home environment and

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[20]   Participating countries are: Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Honduras, Mexico, Panama, Paraguay and Venezuela.

[21]   Violeta Arancibia and Carolina Segovia, "Sistemas nacionales de medición de la calidad de la educación en América Latina y Laboratorio Latinoamericano de Evaluación de la Calidad de la Educación." Paper presented at a Seminar on Standards of Education in Latin America, Santiago: May, 1996.

socioeconomic status. From the point of view of international indicators, the most widely available information is on language and mathematics learning, although nine members Laboratory participants include tests of natural and/or social sciences.

C   At what level will the tests be applied? Here there is great variety, reflecting differences between countries in educational structure, different purposes of the tests, and other factors. Almost all countries test at or near the end of the primary cycle, six of the countries participating in the Laboratory test at the end of the basic or lower secondary, and two have tests at the end of upper secondary.

C   Will tests be applied to cross-sections of the student population or will they trace individual students longitudinally? Most systems are based on cross sections. While longitudinal data are of great value for detailed research and for analyzing national systems, they are especially difficult to compare.

C   Will the tests be given to all students (census based) or will they be based on samples? The answer to this question must depend on the purpose for which the information will be used. It is an area of continuing controversy. For purposes of international comparison, sample-based assessments are adequate or even preferable, and the IEA is designed to test samples.

C   What kind of questions will be used? This is another area of controversy. Options include multiple choice, written, oral, and practical. Associated with this is the question of how the responses will be graded: on the basis of a model answer, a consensus-based system or some pre-established objective criterion. This complex of questions raises important issues about how to interpret and present test results in international comparisons.

C   Will the tests be graded on the basis of absolute criteria or on the basis of national (or other) norms. Again, this depends on the purpose of the tests. Each approach raises different problems in terms of comparing student learning between countries, and when outcome data are based on both norm-referenced and criterion-referenced tests, the problems are worsened.

C   What approaches are used to establish reliability in grading? From the point of view of international indicators, the main question is whether there is a sound system of reliability checking.

C   How are the results expressed? Among the countries participating in the Laboratory, this includes: examination grade averages, percentage of correct answers, percentage of students meeting established standards, degree to which students met national curricular objectives, and a variety of qualitative measures. Transforming data from these sources into comparable international indicators is one of the more daunting challenges for establishment of indicators in this category.

C   To whom and in what form will information about test results be disseminated? Depending on the purposes of the tests, this can include: parents and students, teachers, schools, national and local authorities, and opinion leaders such as politicians and journalists. At the most detailed level, this can include answers to individual test items. For international comparisons, much broader aggregates are needed.

Other questions arise, such as whether the information is used as a basis for allocating resources, the nature and institutional status of the testing organization, and the methods for grading the tests and making the information public. Federal countries may have already faced issues of how (and whether) to use test-based information to make comparisons between subnational polities. In the United States this has been the subject of a sometimes-heated debate that has lasted for decades and involved educators, politicians, researchers and testing specialists. In spite of all this attention, a number of questions about indicators for comparisons between the fifty U.S. states remain unanswered. In terms of international comparisons,

the foregoing questions give a flavor of some of the issues affecting international indicators of student learning or the results of education.

The OECD's Center for Educational Research and Innovation (CERI) published a valuable compendium of papers on the subject of indicators, called *Making Education Count*.[22] This is a collection of some of the world's most sophisticated thinking about indicators, both from the standpoint of federal members of the OECD such as the United States, Canada and Germany, and in terms of international comparisons. Many of the papers emphasize that the measurement of educational results raises difficult problems (both technical and political) and that the proper use of the resulting information is fairly narrowly constrained. In a chapter titled *Developing and Implementing Education Indicators*, Rolf K. Blank states that: "There are three broad methodological options for collecting and reporting data for international indicators: 1) each participating country uses the same data collection instrument; 2) each country has the option of using its own data collection instrument in implementing common standards for categorizing and reporting data, and; 3) each country reports descriptive information within categories for the desired indicator."[23]

Until such time as an international testing system such as the IEA is widely accepted and used in Latin America, the first option is not available. The second option, to establish "common standards for data reporting among countries," requires both some institution to manage the processes of establishing common standards and interpreting and publishing the results, and cooperation among the countries that participate. The Laboratory represents an important step in this direction, and a number of countries seem to be willing to cooperate in this undertaking, although the Laboratory is an externally-funded project whose long-term sustainability is an open issue. The third option is frequently used in international comparisons. It is used, says Blank, "to compare laws and policies in a specific area, such as

teacher licensing. It does not provide for common statistical indicators, but readers can infer differences and determine trends among participating countries or states."[24]

The work of the Laboratory constitutes a major advance toward making information on learning achievement available in the region. The education statistics project is working with the Laboratory to establish a glossary of terms that can be used in connection with evaluation and testing, and to share information and work toward the development of meaningful indicators of educational outcomes.

Until the Laboratory and its participating countries make further advances, however, the feasible indicators are very limited. One important problem centers around the question of what should be measured and compared. Currently, feasible indicators are those that measure language and mathematics achievement. A second major problem is related to one of the questions above: how will the results of the tests be expressed? Although no agreement exists at present, it would probably be some indicator of what portion of students achieved an acceptable score on language and math tests, with acceptable score being related to achieving some portion of the national curricular objectives for the level tested in these subjects. Thus the indicators proposed for this category are the following:

C   Percentage of students achieving criterion level in national language tests at or near the end of the primary cycle and the end of the basic or lower secondary cycle, by gender.

C   Percentage of students achieving criterion level in mathematics tests at or near the end of the primary cycle and the end of the basic or lower secondary cycle, by gender.

In some countries, *criterion level* will mean a passing score; in others using an assessment approach, there may literally be a criterion level supplied. Some specialists suggest including average scores of all students taking the tests for each subject and at each

[22]   Paris: OECD, 1992.

[23]   Ibid., p. 126.

[24]   Ibid.

level. In both cases (criterion levels and averages), data should be corrected for "guessing scores" where necessary.

SUMMARY OF SUGGESTED CORE INDICATORS

Context

C   Population, average rate of population growth, and school-age population (ages 5 through 24 or the closest feasible approximation) as a percent of total population.[25]

C   Gross domestic product per capita and average annual rate of growth of GDP per capita over the past five or more years.

C   Literacy rates, total and by gender, in the population aged 15 and older (with indications by country of what literacy criteria are used).

C   Average years of schooling completed among the population aged 15 and older, total and by gender.

C   Structure of the education system and official school starting age.

Students and Participation

C   Gross enrollment ratios by level, including tertiary, by gender (and by urban/rural region if possible).

C   Net enrollment ratios for primary and secondary levels, by gender (and by urban/rural region if possible).

C   Transition ratios from primary to lower secondary to upper secondary (ISCED 1 to 2 and ISCED 2 to 3).

C   Transition ratio from secondary (ISCED 3) to

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[25]   The OECD uses a 5 through 29 year age group, but this tends to dilute the indicators based on "school-aged population" as a denominator.

tertiary level.

Staff: Teachers, School Directors and Other Staff

C   Total teachers and percent teaching in public and private schools and in urban and rural areas.

C   Total classroom teachers and relationship between classroom teachers and total staff.

C   Percent of teachers who meet national standards for training total, public and private, and urban and rural.

C   Ratio of students to total teachers by level of education (excluding tertiary), total, public and private, urban and rural.

C   Average teacher's salary (measured at some agreed point such as after ten years of experience, including basic salary and additions) as percent of GDP per capita.

Schools and Non-teacher Inputs

C   Establishments:

-   Number and percent of establishments by level of education, by source of support and by urban/rural location.
-   Percent of primary level establishments in multiple shift schools.

C   Inputs:

-   Duration of the school year in hours, and curriculum hours devoted to language, mathematics, and natural and social sciences.
-   Average number of textbooks available to each child, by source of support and urban/rural location.

Internal Efficiency

C   Repetition rates, by level of education.

C   Dropout rate, by level of education.

External Efficiency

C Income of employed workers by level of education, by gender.

C Percentage of the labor force employed, by level of education attained, by gender.

C Social and private rates of economic return by main education levels (separating vocational/technical education from general secondary if possible), by gender.

Education Sector Costs and Finance

C Total, public and private expenditures on education as a percent of GDP.

C Public expenditure on education as a percent of total public expenditure.

C Expenditure by level of education and by public, private and mixed source of support.

C Public expenditure per student per year (recurrent only; recurrent plus capital) by level of education.

C Recurrent and capital expenditure

Results of Education: Student Learning

C Percentage of students achieving criterion level in national language tests at or near the end of the primary cycle and end of the basic or lower secondary cycle, by gender.

C Percentage of students achieving criterion level in mathematics tests at or near the end of the primary cycle and end of the basic or lower secondary cycle, by gender.

Lessons from Other Regions

There is a tendency in Latin America, perhaps due to language differences and geographical distance, to be relatively unaware of developments in other parts of the world. This is true in the field of education statistics as in other areas. The advent of communications media such as the Internet and World Wide Web is counteracting this tendency to some extent. In the course of this study we have found both a generally low level of information about developments relevant to education statistics outside the region, and an avid desire to have more information on the part of the great majority of people working on education statistics.

One of the objectives of the study has been to examine programs for improving education statistics and indicators that are being implemented in other regions. One of the special consultancy studies provides information on the OECD's International Education Statistics (INES) Project and the experience of one country (Spain) in participating in INES. Another body of information casts light on the Association for Development of Education in Africa (ADEA), its Working Group on Education Statistics, and a program called National Educational Statistical Information Systems (NESIS). Both of these experiences can offer useful insights for the countries of Latin America as they endeavor to improve their own systems, although neither represents a perfect model for LAC. The following sections summarize some of the main findings.

THE OECD/INES SYSTEM OF INDICATORS

The OECD's Center for Educational Research and Innovation (CERI) provides the institutional setting for the INES Project but much of the research and developmental work is carried on by a consortium of countries organized as a technical group and four networks. The networks cover educational outcomes, education and labor market destinations, features of schools, and attitudes and expectations. These networks have themselves evolved from an original

set of five, of which two completed their tasks and one divided into two.

Each network is led or chaired by one OECD country (and leadership can change over time). Other OECD member countries participate in some or all of the groups. The costs of their operation are borne by the member countries. The networks establish their own working plans, which were initially endorsed by a scientific advisory group. Eventually this was replaced by a policy advisory group chaired by the chairman of CERI's Governing Board.

Network A, focusing on educational outcomes, provides an example of how the system functions. This network is chaired by the United States, which has a strong interest in the subject and could bring to bear the findings of extensive research. In the early stages, Network A developed a conceptual framework within which to consider outcome indicators, developed lists of indicators in several areas of interest and refined these, and established criteria and standards for evaluating the achievement indicators utilized by various member countries. Indicators of educational outcomes in OECD countries were published in *Education at a Glance* from the outset. Achievement indicators were initially based on data from the IEA Second International Mathematics and Science Study. The 1996 edition of *Education at a Glance* presents indicators of student achievement in mathematics and science, including comparisons of achievement in seventh and eighth grades and an indicator of gender differences, based on the IEA Third International Mathematics and Science Study (TIMSS). All OECD member countries participated in the TIMSS, which made it possible to compare achievement as measured by a common instrument in all countries. The level of analytical sophistication is very high.

The work of other networks has proceeded in different ways. One of the original networks, on education sector costs and finance, carried out

extensive work defining the indicators to be used, developing two information-gathering instruments and preparing detailed guidelines for completing the forms. The result is a rich set of indicators of public and private expenditure that is of great relevance for policy, and a continually updated data base that will permit calculation of an extensive array of indicators relating to specific questions. That network has essentially completed its work and is no longer among the four active networks.

Extensive background and research work is carried out in conjunction with each network, with the costs borne by the countries (and institutions within the countries) participating in each consortium. Participation is said to provide a stimulus to research at the national level.

In addition to *Education at a Glance*, CERI has published a number of technical and methodological studies and papers, reports on work under way or completed, and compendia of papers such as *Making Education Count*, as well as the *INES Technical Handbook* and guidelines and instructions for completing the sector finance forms.

One important lesson to be learned from the OECD's program to develop its system of education indicators is that it requires a long-term commitment. Ten years have elapsed from the time the OECD countries recognized the need for a system of education indicators and initiated a planning process that led to the INES Project. The planning phase itself lasted from 1987, beginning at an International Conference on Educational Indicators, until 1991. The first edition of *Education at a Glance* was published in 1992.

A second lesson from OECD/ INES is that a system of indicators is not developed once and for all but rather in an evolutionary fashion, with flexibility to learn and to respond to changing needs for information. The first issue of *Education at a Glance* was published following a series of international conferences and meetings of technical and advisory groups. Subsequent technical work and meetings have led to changes in the organization and, to some extent, in the content of each successive edition. It is expected that, although the INES Project itself is essentially completed, the OECD countries will continue to identify new policy questions calling for measurement and analysis, additional special studies and a continuing process of change and improvement.

Applicability of the OECD Experience to LAC

The OECD's network structure could not be exactly replicated in Latin America and the Caribbean for a number of reasons. The countries of the region have not formed a voluntary organization similar to the OECD (although subregions such as the MERCOSUR have done so). Even if an institutional structure existed, the countries do not, in general, have the resources to provide the kind of support given to the INES project. Plus, the OECD countries are home to a great number of leading education research centers, which provide intellectual capital that cannot be equalled in Latin America and the Caribbean.

There would have to be a different set of procedures in LAC. While there is a degree of recognition of the need for better information on education, as explicitly articulated by the Ministers of Education in the Recommendation of the MINEDLAC VII meeting in May, 1996, that recognition has not been transformed into action as it was in the OECD. Nor is there an institution representing the countries, such as CERI, that could host an effort to develop a set of indicators. UNESCO-Santiago serves as a secretariat for The Major Project of Education and, in a sense, for the regional ministers in periods between their meetings, and it has served as the executing agency for this project. International aid organizations, which did not play a role in connection with the OECD program, would have to provide a considerable degree of leadership and support for any similar activity, as The Ford Foundation has done in financing this project.

On the other hand, a great deal of valuable conceptual and technical work toward development of education indicators has already been performed by the OECD and could, with minor adaptations, be put to use in LAC.

The Experience of Spain in Adhering to the OECD/INES System.

The consultant study of the OECD indicators system and how it evolved also made comments on the impact on Spain's education statistics of participating in the new system of indicators. The following are excerpts from that section of the report:

"Participation in the indicators project of the OECD has provided an impetus to educational statistics in Spain in various ways:

"It has increased the amount of information collected at the national level, with the aim of being able to meet the demands of the project.

"There has been a revision of the concepts used in our national statistics in accordance with the greater number of definitions and clarifications that the project provides.

"It has improved the quality of data collection and handling since the calculation of the indicators implies a more rigorous analysis of the information that is sent to international organizations.

"[Participating in the system] has strengthened coordination between different national statistical entities (non-university and university statistics, statistics on public expenditure on education, etc.), whose data are needed to complete the international UOE questionnaire, which is used as the basis for calculating the indicators.

"There have been closer relations between the offices responsible for different sets of statistics, which are located in different organizational units (Ministry of Education and Culture, National Statistical Institute (Census) and Ministry of Labor.)

"Given that a great part of the statistics work takes place within the framework of coordinated action between the Ministry of Education and Culture and Spain's Autonomous Communities, which have full control over their education systems, this project has permitted a greater comparability between the statistics of the Autonomous Communities, as a result of the methodological efforts made to adjust the information to the definitions and explanations that the project provides.

"A *culture of indicators* has developed in the field of education statistics, whose most significant aspect is the creation in Spain of a *State System of Indicators* (still being developed) and the joint participation of the statistics and evaluation units in the project.

"[Since the appearance of the joint UOE questionnaire] the main statistical effort within the indicators project has focused on obtaining and reviewing the information necessary for completing this questionnaire.

"In Spain there has been an adjustment in the coverage of statistics on educational activities (students and teachers), and of information on educational expenditures, always in accordance with ... the methodology of the UOE questionnaire.

"The distribution of statistical data between education levels is a basic premise of the indicators project, since using the category *not distributed by level* limits the comparability of information between countries. This has meant that there has been an effort to eliminate or reduce to the greatest possible degree the category *not distributed by level* in Spanish statistics, especially in ... the distribution of general educational expenditures between levels based on the number of students at each level...; the distribution of teachers who attend students at different levels...basically using the criterion of students attended at each level...; the distribution of special education programs by education level in accordance with their closeness to regular education programs.

"Collection of data on age has been extended to all students possible. Currently age data are available for all but four percent of students.

"Students have been classified as full or part time [using a system of coefficients of equivalence]."

The report continues, describing in detail the approaches used to classify upper secondary level students into different programs, dealing with foreign students, new entrants and re-entrants into post-secondary courses, definitions of *graduates*, definition of teachers and non-teaching personnel and data on educational establishments. The report gives the clear impression that participating in the OECD/INES indicators project brought about important positive changes in Spain's educational statistics practices.

Turning to Mexico, the only Latin American country that is a member of OECD, the Mexico country report includes comments on the country's experience in connection with the OECD/INES system.

"The experience that members of the education statistics system have gained [from participating in] the OECD has two aspects. On one hand participation in INES has enlarged the vision of education, placing it in a global framework where social, economic, demographic and labor variables come to bear. The development of this vision has made it possible to enrich the analysis of the problems that confront the education sector and, even more important, has contributed to the design of solutions. This vision is the result of the relationships OECD shows between the different types of variables mentioned.... On the other hand Mexico ... has tried to arrive at the levels of disaggregation proposed by the OECD.... The UOE questionnaires have been used as a reference to obtain disaggregations and classifications that permit more fine-grained analyses.... The principal contribution of INES is in the area of educational expenditures, since the only education finance indicator in Mexico was unit costs of education. Now we can calculate indicators according to type of financing and type of expenditure, for example private and state expenditures." The consultant concludes by underlining the difference between the objectives of the national system, which are diagnosis and planning, and the international comparison objectives of OECD/INES.

THE ADEA WORKING GROUP ON EDUCATION STATISTICS AND NESIS

A second experience from another region is provided by Africa's National Education Statistical Information System (NESIS). The Association for Development of Education in Africa (ADEA) has as a Working Group on Education Statistics (WGES), led by the Swedish International Development Agency and with operational headquarters in the Education Statistics Division of UNESCO-Paris.

ADEA formed the WGES in 1989 in response to a priority need identified by its members, including both the donor organizations and the countries of the region. Between 1989 and 1991, the WGES developed a strategy for improving education statistics, a work program and a set of operational principles. Its objective is to "initiate sustainable processes towards the vitalization of national education statistical information systems in Sub-Saharan Africa."

The strategy adopted is to develop national capacities to collect and analyze education statistics. NESIS was created as the instrument for implementing this strategy. It operates through "mutually beneficial and supportive joint efforts of African countries, donors and technical agencies." While there is a small group of countries in LAC where national capacity building is greatly needed and should have the highest priority, that is less true of the majority of the countries in the sample studied for this project, and largely unnecessary in the case of four or five of the most advanced countries. Still, there are lessons that can be learned from this experience.

Countries of the Region Play a Leadership Role

The hallmark of the NESIS program is its focus on strengthening *national* education statistics systems through various capacity-building activities. Countries first elected to participate in NESIS and then surveyed their information needs and reviewed the available statistics to identify gaps. Thirty-five countries initially indicated their interest in taking part in the program and 21 eventually conducted diagnoses and produced national plans. The goal was to meet the information needs of decisionmakers.

Education statistics professionals in participating countries gave priority to strengthening the coverage, reliability and timeliness of core data pertaining to teachers, facilities, materials and sector finance. While a parallel effort has led to the development of a Statistical Profile of Education in Sub-Saharan Africa (SPESSA), with early leadership from the World Bank and financing from USAID, the NESIS program itself has not emphasized the development of indicators for international comparisons within or outside the region.

Representatives of the ministries of education also play leadership roles in ADEA and WGES and this sharing of leadership is characteristic of NESIS as well. The concept of developing sustainable national capacity pervades the work of NESIS. There is a notable effort to avoid imposition of outside expertise, even though specialists are involved in activities such as development of technical manuals and generic modules that were designed as "integrated, mutually supportive 'do-it-yourself' packages."[26]

Each Country Has an Advisory Committee at the Policy-Making Level

Each participating country has its own advisory committee that includes top level officials who are the eventual consumers of statistics and indicators. This assures that developmental work is sensitive to the needs of senior officials, and that the officials themselves know and care about the work being done to provide them with essential information.

Implementation Is Coordinated by a Professional Team

A special team located in UNESCO's Education Statistics Division has hosted the NESIS program and coordinated the national activities. This team is positioned between WGES and its member countries and agencies, which are the source of bilateral and multilateral aid to help finance cach country's efforts. The NESIS team at UNESCO contracts consultants, arranges for the publication of documents, manuals and other materials, and maintains a flow of communication between the key parties involved.

Development of Tools and Materials by Specialist Consultants

A generic module on how to carry out a diagnosis of national needs for education statistics and indicators. A series of more specific modules was developed based on it. African country technical teams (who will eventually be in charge of implementation in their own countries) participate actively in developing these modules, with technical advice and training provided by NESIS. Additional modules completed or planned include: organization and management of education statistics, a series of data modules, analysis modules, and decision application modules. Pilot projects in individual countries or groups of countries test the modules, tools and materials developed. In these processes one of the objectives is to foster the development of African specialists. This "cadre of African specialists ... could develop into a network of specialists who ... could provide technical assistance to countries that were not involved in the pilot projects themselves but wish to implement NESIS modules."[27]

Development of a "Statistical Profile of Education"

Recognizing the pressing need for comparable information that would permit analyzing and eventually monitoring the state of education in Africa, ADEA, with the support of the World Bank sponsored the collection of data sets for comparisons across countries and groups of countries (especially groups with different languages and educational models).

The first output of this effort was a booklet entitled *Statistical Profile of Education in Sub-Saharan Africa in the 1980s*, based on data from the World Bank and UNESCO's Division of Statistics. The

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[26] NESIS Brochure.

[27] Ibid.

data include both basic statistics and education indicators, hence the title *profile*. Later, and with financing from USAID, the data were updated and specialists prepared a computer-based model that presents the data in spreadsheet or graphic form.[28] It is the writer's understanding that the software developed under this program could be adapted for use in LAC, once a basic set of data and indicators becomes available.

The Need to Provide a "Forum" for Exchange of Information

While the first, and still most important, activity of the WGES is NESIS, those interested in strengthening education statistics in Africa felt the need for some means of exchanging information and experiences. To that end, the WGES Forum takes place at the same time as the ADEA's periodic meetings. Its main purpose is to permit people working in the field of education statistics in Africa to exchange information on experiences and innovations, make contacts with others with similar interests and, on occasion, to make arrangements for special meetings and follow-up activities. More recently, WGES has considered publishing a Network Bulletin to be circulated to interested persons, and holding special Forum meetings on selected technical topics with publication of documents and contributed papers.

The Need for a "Clearinghouse" Function

As stated in a discussion paper prepared for WGES, "one of the problems encountered by all parties in the development effort is the lack of an overview and, thereby, coordination of the activities conducted by various organizations and their programs, projects, etc." In order to overcome this problem, WGES proposed establishing "1) clearinghouse services for information on projects, programs, experts, etc.; 2) network building among experts, specialists and other resource persons working in the area of African Education Statistics; 3) a country monitoring system to facilitate coordination of activities in the area of basic education statistics." The Clearinghouse began operations in 1994-95.

Co-Financing of Operations.

The countries and agencies participating in the WGES finance the operation of the NESIS program. A substantial amount of in-kind support is provided by agencies, especially UNESCO's Division of Statistics, the host agency, which provides infrastructure, communications and staff support in addition to the small NESIS team; and Swedish SIDA, the lead agency, which provides leadership and coordination. Aid agencies and countries, including the African countries themselves, provide the time of their staffs to participate in NESIS activities. In addition, NESIS's proposed budget for 1997 was US$1,820,750 (up from $1,150,000 in 1996). This amount is provided by the countries and agencies participating in NESIS. It covers the cost of African participants in meetings (travel and lodging), research and commissioned studies, publications, facilitation and study visits, the costs of the NESIS regular staff and the costs of NESIS projects such as consultants' work to develop technical modules, manuals and other materials. Nearly 60% of this amount in 1997 is destined for projects and 21% covers the costs of NESIS staff.

The orientation and content of WGES's work differ considerably from the needs of LAC countries. There are, nonetheless, useful lessons to be learned from the program, which enjoys strong support at both the country and international levels.

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[28]   See ADEA, *Statistical Profile of Education in sub-Saharan Africa (SPESSA), User's Guide*. Paris: ADEA, 1995

Conclusions and Recommendations

This study found that, while there have been important improvements in the status of education statistics and indicators in LAC there are still major shortcomings. The countries with the least-developed systems as well as those that have made notable advances in recent years are in need of better statistics and information to guide their education policies and programs, to be able to design sound programs and projects, and to monitor the progress of their education systems. Rising interest in educational change and reform throughout the region only underlines this need. This review finds many hopeful signs of improvement and increasing interest in establishing and using indicators, but it also finds a number of significant problems.

Numerous international aid projects have attempted to improve national capacities to generate and use information to guide education policies and plans, and some have achieved considerable success. On the whole, however, outside financial and technical aid, coupled with countries' own efforts, have not overcome the main deficiencies in availability of information. There is not a country or group of countries that has what could be called a fully adequate system of education statistics and information, although some like Brazil come close, and there are outstanding examples of pieces of a complete system in places as diverse as Paraguay or the Province of Mendoza. Nor is there a region-wide system of education indicators that provides a basis for assessing and monitoring the status of education in LAC.

As mentioned in the first chapter, a meeting of the Advisory Board for this study, held in Washington, D.C. in May, 1997, was informed that important changes would be taking place in the statistics function of UNESCO-Paris. In a memo dated June 26, 1997, the Director General of UNESCO announced the establishment of an International Institute for Statistics. This will be a semi-omous

entity within the UNESCO family of institutes, with a status somewhat like that of the International Institute of Educational Planning (IIEP). A memo dated July 9 announced plans for a joint UNESCO-OECD pilot project to develop a system of *World Education Indicators* that would draw upon the OECD/INES experience. This is important and encouraging news with far-reaching implications for education statistics and indicators in LAC (and throughout the world). The Institute for Statistics could provide needed leadership, while a system of *World Education Indicators* based on the OECD/INES model could provide the basis for consensus about the content of an indicator system for LAC.

The following sections draw together some of the main findings of this study and consider the lines of action that international aid organizations and countries of the region might take to improve education statistics and indicators. Each section takes account of the new information concerning UNESCO's International Institute for Statistics and the World Education Indicators pilot project and how these may affect efforts within the region to improve education statistics and indicators.

NEED FOR CONSENSUS ABOUT WHAT CONSTITUTES GOOD PRACTICE

There has not been not a body of agreed-upon wisdom that could guide countries seeking to improve their education statistics systems. Project staff of major aid organizations (and the writer was one of these) have not had a source of expert guidance to which they could turn, or could refer borrowers wanting to know how to improve education sector information. This has meant that each country has developed its own system of education statistics, with the result that important concepts and definitions differ, and basic information such as sector costs or student age by grade is often missing, making it

difficult to analyze key factors such as efficiency. Whole categories of information are omitted from many national systems, especially on the results of education in terms of either learning achievement or labor market outcomes.

Almost all the countries surveyed have received some form of international aid for education statistics, indicators and/or management information systems (often as part of institutional strengthening efforts to improve sector administration). Yet aid projects in this field have not been as effective as they could have been for lack of a body of information about best practices and a cadre of knowledgeable technical advisors who have access to up-to-date information. While it is still early to know what operational directions the new International Institute for Statistics will take, it is possible that it may fill the need for guidance, leadership and information about education statistics and indicators. To do so, it will need to adopt a different posture and role than UNESCO has done in the past.

A system of World Education Indicators would provide the coalescing point that has been needed. If such a system follows the OECD/INES model as announced, this would offer many advantages. The OECD indicators published in *Education at a Glance* have been developed by a diverse group of countries, over an extended period of time and at great expense, taking advantage of the best technical expertise available in specialized fields such as education sector costs and finance and the measurement of cognitive outcomes of education. For the Latin America and Caribbean region, it is important that Spain, Portugal, France, the United Kingdom and Mexico all participate in the OECD/INES system, which lends it immediate credibility. Using OECD/INES as a starting point would require diplomatic persuasion, but would take advantage of the developmental efforts already made and would save much effort in building consensus. As discussed further below, however, it will be important to allow the countries to adapt it (and the associated UNESCO/OECD/EuroStat questionnaire) to their own needs and statistical capabilities.

LACK OF INFORMATION ABOUT DEVELOPMENTS IN OTHER COUNTRIES

AND REGIONS

This study has found that there are countries in LAC that have made or are making admirable improvements in their education statistics and indicators, but these efforts and achievements are dispersed and not available beyond a narrow circle. With the exception of the work of CARICOM and the OECD countries of the Caribbean, there is not a functioning system for exchanging information between countries. Moreover most professionals working in the field of education statistics have very little information about developments outside the region, even such outstanding models as OECD/INES. Countries reinvent the wheel or simply fail to take advantage of knowledge that could be very useful and that could be made readily available. The countries of LAC will need to be aware of resources available through the new Statistics Institute and international aid organizations will need to help and guide them. The Institute itself will have to develop and emphasize its role as a source of such guidance. All of this will have financial costs, and one can hope that the Statistics Institute will have an adequate budget for outreach activities. But the aid agencies will need to play a part as well, providing the resources for countries to obtain the information needed to improve their education statistics and put the knowledge to use.

NEED FOR LEADERSHIP

The study has found that some organization or group of organizations will need to assume a leadership role in the area of education statistics. Earlier studies, including Jeffrey Puryear's important article[29] and the Report of the Board of International Comparative Studies in Education (BICSE)[30], also came to this conclusion. The OECD initiated the INES project

[29] Puryear, Jeffrey M. "International Education Statistics and Research," *International Journal of Educational Development* 15, No. 1, pp. 79-91.

[30] Guthrie, James W. and Janet Hansen, *Worldwide Education Statistics: Enhancing UNESCO's Role*. National Academy of Sciences, Board on International Comparative Studies on Education, National Research Council. Washington: National Academy Press, 1995

because its member countries agreed that there was a need for better information about education. OECD's institutional structure (including its Center for Educational Research and Innovation) made it possible to launch the project. In some sub-regions of LAC such as the MERCOSUR (and possibly among the Andean countries of the Convenio Andres Bello), there are clear indications that the countries recognize the need to have sound, comparable information on education. In spite of these signs of possible receptivity, some catalyst is needed if a region-wide movement toward better education statistics and information is to take shape. Now UNESCO's new International Institute for Statistics, working together with the Regional Office in Santiago, may be able to perform that leadership role.

A PARTICIPATORY MODEL FOR DEVELOPMENT OF CONSENSUS

This study has found that many countries have an avid desire for technical advice and information on how to improve their education statistics and indicators. But a *top down* approach, even if it provides a technically superior model of a statistics and indicators system, would tend to encounter resistance and objections regarding whether or not the model fit the information needs and priorities of the countries. The pilot project approach, whereby leading countries of each developing region adopt an indicator system based upon OECD/INES, may overcome the tendency to resist top-down imposition.

At the early stages of INES, countries of the OECD worked on a participatory basis, first to study their statistics systems (structure, taxonomy, major variables and indicators already available), and then to develop a design for a system of indicators that was itself viewed as a work in progress and subject to criticism, revision and change. The WGES/NESIS system is founded on the principle that member countries develop their own national capacities. NESIS offers generic modules and models as well as technical advice, but there is great sensitivity to the need for African countries to take the lead in improving their own systems.

Improvement efforts based on democratic and participatory methods need to be managed carefully in order to produce good results. UNESCO's workshop on education statistics, held in Quito in January of 1995, was designed to give the participants the determining voice in the design of a common statistics system but did not achieve its desired objective. The participants who attended were not, for the most part, either expert in the field or well informed about best practices and models, there was little technical guidance available to the meeting, the participants came from different kinds of institutions (education statistics offices, census bureaus, etc.) and did not share a common understanding of the subject, the time allowed was too short to accomplish the ambitious agenda and there was no follow up. A later workshop focusing on education cost and finance indicators was more successful since the participants were more homogenous and expert, an outside technical expert provided guidance, and the aims of the workshop were more realistic in the light of the time available. Although the NESIS experience does not provide a perfect model for application in LAC, there are important lessons to learn from its bottom-up, country-oriented approach.

DEVELOPMENT OF A CULTURE OF USING INFORMATION FOR POLICY

In a paper prepared for this study on major issues affecting education statistics, Ernesto Schiefelbein argues that there is more information available than is being used, and that the weakest link in the information chain is utilization of empirically-based data to cast light on education system performance. Jeffrey Puryear has commented on the vicious circle of not-very-good statistics leading policymakers to base decisions on political considerations or whim rather than solid data and analysis.[31] The demand for good education statistics is weak in part because the quality of the existing product is poor.

While changing the world view of rapidly-rotating politicians has proved to be extremely difficult, there are two ways in which a program to improve education statistics and indicators can have an impact

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[31] Puryear, op. cit.

on the culture of decision-making. The most basic need is simply to improve the quality of the product. First, creating indicators that are readily comprehensible and full of content is an important step toward helping sector leaders base decisions on data rather than whim. The consultant study on the impact of Spain's participation in the OECD/INES Project is eloquent on the point. Second, the availability of good information will make it possible for permanent professional staff, senior policy analysts and education researchers to develop expertise and experience in performing technically sound, persuasive studies and reports. This group— senior technicians, consultants and policy analysts and academic researchers—has more stability than political leaders and its members may, in their turn, become political advisors. Better information may contribute to what has been called *informed dialogue* about education policy.[32]

One of the findings of the country studies is that education statistics offices are frequently isolated from sources of information other than from the schools. The staffs of these units do not themselves have a culture of indicators that would lead them to link data from within the education system with information from ministries of finance, census bureaus, household surveys and other sources in order to create meaningful indicators. Another finding is that the most common problem cited by directors of statistics in the sample countries is a need for training. A program to develop education indicators, using various means of information exchange, workshops and training, would respond to the needs of those who produce the statistics and contribute to developing a culture of providing and using information to guide education policies and plans.

The UNESCO International Institute for Statistics and other members of the international aid community will need to take into account the

relationship between the provision of adequate information and its use. Good statistics and indicators may tend to produce their own demand, but it would be wise to incorporate programs to train users and provide models of analysis and to promote a culture of indicators together with development of the basic information.

STEPS TOWARD IMPROVING EDUCATION STATISTICS IN LATIN AMERICA AND THE CARIBBEAN

How can education statistics and indicators be improved in the Latin American and the Caribbean Countries? Creating a system of World Education Indicators will pose daunting challenges in all developing regions of the world, including LAC. As stated in Chapter 2, countries can be divided into several groupings based on their statistical capabilities: some are well advanced, a few are very weak, and there is a large middle group of countries that have made important improvements but still face many problems. While the more advanced countries may be able to meet the requirements of the OECD/INES indicators system — as Mexico is already doing as an OECD member —a majority are far from being able to do so. (And if this is true in LAC, it is even more true in Africa.) It is probable that a worldwide system of education indicators will call for some process of mutual adaptation: of countries to the demands of the INES system or some version thereof, and of that system to the capabilities of developing countries. There will also need to be a differentiated approach to the several groups of countries. While the more advanced could follow Mexico and begin to participate in the OECD system, others would need major developmental efforts (which would require technical and financial assistance.) UNESCO and other donors should take account of this need. In particular, the UNESCO Regional Office for Education, with its base of knowledge about the countries, should be encouraged and enabled to work with the Institute of Statistics in strengthening capacities in the region and moving toward a common system of indicators.

One possible model for working with countries with different levels of advancement and statistical sophistication would be the use of networks similar

[32]   Reimers, F. and Noel McGinn, *Informed Dialogue: Using Research to Shape Education Policy Around the World.* Westport, Connecticut: Praeger, 1997. See especially pp. 92-94.

to those used by the OECD. In the early stages of the OECD/INES project, work to develop indicators in different areas was carried out through networks that focused on categories of indicators such as student learning (education outcomes), education processes within the schools or sector costs and finance. One country assumed leadership responsibility, including responsibility for a significant part of the cost, and others participated (or not) based on their interest in the topic.

Assuming that a system of World Education Indicators is initiated, the need in LAC will not be to design and develop the indicator system but rather to disseminate information about the system and to help countries strengthen their statistics systems in order to be able to participate in it. Bearing in mind the differences between countries and groups of countries in their levels of readiness to participate, this study recommends using a network arrangement similar to the one used by OECD/INES. A key difference would be that, at least at the outset, donor and technical advisory organizations will need to play the leadership roles in the networks.

The advantages of a network approach are: 1) it provides for division of labor in what is a very extensive body of work; 2) participants (countries and agencies) can focus their efforts where needed; 3) if countries or agencies participate in multiple networks, they can assign their best experts to work in the relevant networks rather than have one or a few staff attempt to cover all subjects; 4) categories of statistics that present major challenges and in which development work will require substantial time (statistics and indicators on student learning, for example) can progress without either being pressed to rush to judgement or delaying development in other areas; 5) once work has advanced satisfactorily in an area, that network can bring its work to an end, as was the case with OECD's costs and finance network, and; 6) it avoids creating a single large institutional unit, since a relatively small team such as the project teams of INES or NESIS can coordinate multiple activities. Two areas in which networks would be very useful would be labor market outcomes and learning outcomes. In the latter case, the Latin American Laboratory for Evaluating Educational Quality is already positioned to take the

lead in such a network.

IMPROVEMENT WILL REQUIRE TIME AND CONSISTENT COMMITMENT

As noted in the fourth chapter, both the OECD/INES and WGES/NESIS programs have required extended periods of time to reach their present stages of development, and while both could be considered mature, they are still evolving and changing. OECD's preparatory phase required four years and its network approach to developing indicators in different categories has continued even after the first editions of *Education at a Glance* appeared. And this, one must bear in mind, took place in a voluntary program, carried out by an organization of developed industrial democracies, with ample human and financial resources to bring to bear. While the countries of LAC can benefit from much of the work that has been done elsewhere and thereby save considerable expense, it would be unrealistic to expect to be able to implement a program to improve education statistics in a short time. If the countries of the region and the international organizations with an interest in improving education statistics wish to undertake a program that has a reasonable prospect of success and sustainability, they will have to recognize that it will require a number of years and a commitment on the part of all parties to continue their support, both moral and financial.

A possible operational goal for the LAC region as a whole would be to prepare a basic set of common indicators to present to the Ministers of Education in time for their next regional meeting in 1999. If this were limited to a modest set of core statistics and indicators, assembled for the most part from available information, it would probably be feasible. But there would inevitably be many gaps, especially in the last four categories of information and indicators. More importantly the essential work of building national capacities, developing a culture of indicators and promoting the intelligent utilization of an improved set of data would only be begun. Work would still be needed to extend and deepen the indicator sets in each category, provide guidelines and training/technical assistance, and implement projects to improve education statistical services in those countries where this is still needed. And since

such activities must involve the active participation of the countries of the region, one must recognize that they will take time.

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Appendices

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Brazil	Elisa Wolynec
State of Ceará	Sofía Lerche Viera
OECS [33]	Cools Van Loo
Ecuador	R. W. McMeekin
Guatemala	Reth Suasnavar
Guyana	Evelyn Hamilton
Nicaragua	Yolanda Zamora
Paraguay	R. W. McMeekin
Uruguay	Juan Carlos Palafox

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[33] The Organization of Eastern Caribbean States includes: Antigua/Barbuda, Anguilla, British Virgin Islands, Dominica, St. Kitts/Nevis, Montserrat, St. Lucia, and St. Vincent and Grenadines

Special Consultancies

C   Ernesto Schiefelbein: Major Issues and Problems Affecting Education Statistics in Latin America and the Caribbean

C   J. Price Gittinger: Inventory of Programs and Projects to Improve Education Statistics in Latin America and the Caribbean

C   Jesus Ibañez (under the supervision of Isabel Muñoz, Director of Planning, Ministry of Education): Study of the OECD/INES Program of Education Indicators

C   Vivian Torol: Collection of information on the National Education Statistical Information Systems (NESIS) Program of the Working Group on Education Statistics of the Association for Development of Education in Africa