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Educational Progress and Economic Development

Abstract

[Excerpt] Many development agencies seek to channel economic assistance to those less-developed countries (LDCs) and activities that will help the poor to achieve a better life (this phraseology is from the U.S. Foreign Assistance Act as amended in 1975). Education is an important indicator of countries' performance. This chapter examines the suitability of alternative education indicators as guides for planning and evaluating countries' progress and commitment toward increasing the participation of the poor in development.

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Educational Progress and Economic Development

Gary S. Fields

Many development agencies seek to channel economic assistance to those less-developed countries (LDCs) and activities that will help the poor to achieve a better life (this phraseology is from the U.S. Foreign Assistance Act as amended in 1975). Education is an important indicator of countries' performance. This chapter examines the suitability of alternative education indicators as guides for planning and evaluating countries' progress and commitment toward increasing the participation of the poor in development.

Both the short- and long-term benefits of education must enter into an analysis of education's contribution to development.¹ Education is a valued component of present consumption because it has the essential characteristics of merit goods.² However, the case for expanding education is even stronger if it can be shown that educational investment pays off in enhancing future productive activity. The tools of cost-benefit analysis, used appropriately, may help to evaluate the investment potential of education. Likewise, economic analysis may help to gauge the consumption value of education vis-a-vis other alternative uses of resources.

In economic terms, it is possible for a society to have too much education. Education has an opportunity cost—for example, the cost of having more schools may be fewer hospital beds or less food supplementation for the poor. This example illustrates two important features of merit goods: (1) Like other economic goods and services, merit goods are costly to produce, and (2) some merit goods may be valued more highly than others. Economic analysis can be of great value in forcing each decision maker to weigh (either implicitly or explicitly) the benefits of more education against the costs (both direct and in terms of other projects foregone).

Education, I believe, is a lower-order-merit good—that is, life itself, health, nutrition, clothing, and shelter are higher priorities. Poor countries may postpone the provision of education until such time as their people

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are well fed, well housed, and well clothed. If this is the case, any measure of educational performance is an insufficient index of the economic well-being of the poor. The preferred indicators of educational progress and commitment, whatever they may be, are useful only in conjunction with indicators in other areas.³

The remainder of this chapter is organized as follows. The next section briefly highlights some of the major lessons from studies of educational performance in developing countries. The following four sections consider various indicators of educational progress and commitment that have been suggested, the availability of data to measure them, the indications they give on educational performance in five LDCs, and the possibilities of improving future reporting of these indicators. The seventh section and the accompanying appendix present a critique and reformulation of the social-cost-benefit approach to evaluating education's past performance and planning education for the future. The last section summarizes the main results.

Lessons from Studies of Educational Performance in LDCs

In many countries, a veritable education explosion has occurred.⁴ More people are receiving more education than ever before. UNESCO publishes data on the growth of education at various levels throughout the world. School enrollments have increased faster than population growth. Higher education has expanded most rapidly. LDCs have achieved higher rates of educational growth than developed countries.

Often, unemployment befalls relatively well-educated individuals (high-school graduates and even some with college degrees). Numerous studies have shown that the unemployed are relatively well educated.⁵ The highest unemployment rates are found in the intermediate-education categories. The causes of unemployment and underemployment among the educated have been extensively debated. Among the arguments are inappropriateness of the type of education received, creation of false hopes by the educational system, low quality of education, inability of the economy and the labor market to create enough jobs that utilize the skills of the educated, and unemployment as part of a process of rational search by the educated for the best jobs.

Educational opportunities are unequally distributed geographically. In most LDCs, a much higher proportion of urban children is able to attend school than the proportion of rural children. Some regions have

virtually no upper-level schools or well-educated persons. Within a country, school quality frequently varies substantially from one area to another.

Educational opportunities are unequally distributed according to parents' socioeconomic status, but educational systems are far from closed to the children of the poor. Some observers argue that educational systems are stratified so as to exclude the children of the poor, while others characterize LDCs' educational systems as vehicles for social mobility. The truth most likely is located about midway between the two extremes.

Where studies of school finance are available, they indicate that, although the poor receive a disproportionately small share of the benefits of education, they also pay a disproportionately small share of the costs. The benefits to the poor are limited by inadequate access to education, while the costs paid by the poor are reduced by the lower taxes they pay. Evidence on this point is available in studies of countries as diverse as the United States (Hansen and Weisbrod 1970), Colombia (Jallade 1974), Brazil (Jallade 1977), and Kenya (Fields 1975). Jallade's study of Colombia goes one step further, showing that the ratio of benefits of education to costs is highest for low-income families and that it decreases steadily as income rises.

When educational systems expand, some poor children are drawn into the enlarging school systems. Innumerable instances at the regional, or even village, level could be cited. We lack information, however, on the extent to which the children of the poor rather than the middle or upper classes benefit from the provision of additional spaces. The lack of information is particularly acute at the secondary and higher levels.

Educational growth tends to occur contemporaneously with economic growth. Two kinds of evidence are available: cross section and time series.⁶ The pattern that emerges from cross-section evidence is that high-income countries tend to have higher educational enrollments. In the time-series evidence, at the primary and secondary levels, enrollment tends to grow fastest in the faster-growing countries. However, the association is not a close one. The literature on the relationship between educational growth and economic growth is plagued by a persistent difficulty—namely, the problem of causation. Educational growth causes economic growth and economic growth permits educational growth, but the relative importance of these two simultaneous effects has not yet been **demonstrated satisfactorily.** -J

Others with more faith in social-rate-of-return studies than I would use the findings of these studies to argue that more national and international resources should go toward the provision of education, particularly primary education, in LDCs. I agree with this policy conclusion but not because the social-rate-of-return studies have convinced me.

Conceptual Suitability of Indicators of Educational Progress and Commitment

Various indicators of educational progress and commitment have been proposed, and following are my assessments of some of them.⁷

School-Enrollment Rates

Enrollment rates refer to the fraction of school-aged children who are enrolled in school. I believe these rates are the best single indicator of progress. They show how many children actually have access to schools, data on which is particularly important at the primary level. This reflects both the existence of spaces in school and parents' ability to pay fees and to forgo their children's labor. School enrollments are regularly measurable at low cost. Nearly always, enrollment rates are broken down by level of schooling. This breakdown permits us to distinguish between primary education (which many regard as a basic human right and which is most relevant to the target group—the poor) and other levels. Other breakdowns for which data are sometimes available are by sex and by geographic location. These breakdowns may reveal alarming instances of inequality of opportunity. In the case of geographic breakdowns, however, even in countries where the poor are concentrated in particular geographic areas, there is no assurance from regional data that in fact the [poor in poor areas are the recipients of education. An even better break -
| down of school-enrollment rates would be by socioeconomic status of
; \ parents, since socioeconomic distribution is a much better indicator of
i \ the extent to which the recipients of education are the poor, but such
L status is an elusive concept that is not easily measured.⁸ Enrollment rates are also meaningful indicators of commitment. Care must be exercised in interpreting enrollment data as a sign of commitment, though, since it is hard to tell whether the commitment is by private individuals seeking personal gain for themselves and their children or by a concerned public sector. For many reasons, some of which have nothing to do with society's commitment to education for the poor or lack thereof, parents of high socioeconomic status are more likely to acquire more education for their children.

Recipients of Nonschooling Education

Numbers of recipients of nonschooling-education indicate the participation of the population in less-formal-educational programs. Included in

this group are recipients of apprenticeship, adult education, on-the-job-training, extension, and other forms of continuing education. Rarely are these broken down below the national level. Conceptually, they are good measures of progress, since they show how many persons have access to learning opportunities outside of schools. Some difficulty of interpretation exists since nonschooling education may either complement or substitute for schooling, and this may vary from one country to another. There is also a measurement problem in defining who is a recipient. Nonetheless, this is a promising area on which little research has been done to date.

School-Completion Ratios

School-completion ratios are calculated as the percentage of the labor force or adult population that has completed various schooling levels. As a measure of progress, these ratios are valuable in showing the stock of educated persons. Of particular interest is the proportion of primary-school completers. Breakdowns by location and sex and often tabulated. The limitations of completion ratios are that they are restricted to formal-schooling attainments and are very slow to change, even if rapid progress is being made for the young generation.

Literacy and Numeracy Rates

Literacy and numeracy rates refer to the proportions of adults who can read, write, and perform simple arithmetic operations—that is, they reflect the cumulative acquisition of skills. These measures are especially relevant to poverty groups, though the applicability only up to a basic level is also a limitation. Conceptually, literacy and numeracy are not easily defined, which leads some observers to reject these measures, but I would say that the definitional problem is surmountable with a certain degree of arbitrariness applied consistently over time. Literacy and numeracy rates can and should be used as indicators of progress.

Educational-Expenditure and -Finance Data

These data tell what quantity of private resources and how much of the government's budget and national income are spent on education. They also indicate how the educational system is financed (for example, whether it is out of tax revenues, student fees, and so on). Expenditure

information is the single best indicator of commitment to education, though it is not entirely free of difficulties. One need only look briefly at the position of the United States at the top of the spending scale to realize that school expenditures depend in large part on a country's ability to pay. For intertemporal comparisons within a country, information on total expenditure needs to be supplemented by other data to show that more spending results in better-quality or higher-quantity education rather than, say, using the additional education budget to raise salaries of existing teachers without expanding enrollments. For international comparisons, observers must remember the great differences across countries in public versus private financing, central-government versus state and local responsibility, differential importance of private and parochial schools, and varying practices with respect to tuition and fees.

Conceptually, school-finance data may also be good indicators of commitment—for example, abolition of fees, reliance on more progressive taxes, and equalization of quality across districts and regions. However, users of school-finance data must be sensitive to secondary effects such as, if the public sector assumes a greater share of school costs, who pays the taxes to finance the government? Of course, the determinants of any public-finance system are many and complex. It is unlikely that school-finance information will be readily tabulated in an internationally consistent form, but even if it were, educational-finance issues are of secondary importance compared with production-function kinds of concerns.

Rate of Return to Education

The rate of return to education is the percentage increment in income that society realizes on its educational investments. Those who have faith in markets and in the technical prowess of economists say that social rates of return to education are guides to the efficiency of resource allocation patterns. On this view, educational systems are thought to be performing efficiently when social rates of return are equalized across various educational levels since it is inefficient for a dollar invested one place to earn more than a dollar invested elsewhere. To more-agnostic analysts, however, a high rate of return to education might mean any number of things: for example, that society is wisely spending resources in a high-payoff area, that more expenditure is needed until diminishing returns drive the marginal rate of return on education down to the social-discount rate, that the apparently high social rate of return to education is a mirage due to unjustifiable wage premiums received by highly educated workers, or that the rate of return to education may be high privately but "hot socially

because the better educated are hired preferentially, bumping the less educated into lower-level jobs or unemployment. Because of these ambiguities of interpretation, I do not see that data on rates of return to education, taken by themselves, are of much use as an indication of either progress or commitment in the field of education.

Summary

The various arguments presented in the preceding sections are outlined in table 3-1. In summary, several indicators of progress in the education sector appear to be conceptually satisfactory to a greater or lesser degree: school-enrollment rates, nonschooling-education recipients, school-completion ratios, literacy and numeracy rates, and educational spending, each of these broken down, insofar as possible by schooling category, sex, geographic location, and parents' socioeconomic status. These same measures are much more difficult to interpret as indicators of commitment, but they still may be of some value. Of these, literacy and numeracy rates and rates of enrollment in primary education may be the best indicators of educational progress for the poor, and expenditure data may be the best indicator of commitment.

Data Availability on Educational Indicators

School-Enrollment Rates

The most accessible compilation of enrollment rates is the *Statistical Yearbook* series published by UNESCO. Primary- and secondary-school gross-enrollment ratios are given for about 140 countries, most of which are available on an annual basis. Three types of secondary education are distinguished: (1) general (academic or composite), (2) teacher preparation, and (3) other vocational or technical. For tertiary education, gross-enrollment ratios are published for a somewhat lesser group of countries (130) on a less-regular basis. Net primary- and secondary-school-enrollment rates are given sporadically for about 80 countries. In many cases, enrollment information is disaggregated by sex. Hence, good data are available for school enrollments broken down by level of schooling and by sex. However, breakdowns by parents' socioeconomic status, region, or other correlates of poverty cannot be undertaken.

Recipients of Nonschooling Education

Among the types of nonschooling education of interest are adult education, on-the-job training, agricultural extension, learning by radio, and

Table 3-1
Appropriateness of Various Indicators of Educational Progress

<i>Indicator</i>	<i>Appropriateness as Indicator of Progress</i>	<i>Appropriateness as Indicator of Commitment</i>
School-enrollment rates	Shows how many persons actually have access to schools, which reflects existence of spaces in school and parents' ability to pay fees and to forego their children's labor.	Difficult to interpret since a country may be committed to education but may choose to tend to other social concerns first.
Nonschooling education	Shows how many persons have access to education outside of schools; problem of interpretation since nonschooling education may either complement or substitute for schooling.	(same as above)
School-completion ratios	Shows stock of educated persons, but it is limited to formal schooling.	(same as above)
Literacy and numeracy rates	Reflects cumulative acquisition of skills, especially useful for poverty groups but applicable only up to a basic level.	(same as above)
Educational-expenditure and finance data	Use of expenditure data relies on the assumption that more spending results in more education in terms of quantity or quality; this may be invalid (for example, if additional spending is used to raise salaries of existing teachers). Finance data alone can tell little about progress (for example, if public sector assumes a greater share of school costs, who pays the taxes to finance the public sector?).	(same as above)
Rate of return to education	What it signals is not clear. High rate of return to education may mean society is spending resources in a high-payoff area, or more expenditure is needed (until diminishing returns drive marginal rate of return down to social-discount rate), result is spurious due to unjustifiable wage premiums received by highly educated workers, or rate of return to education may be high because better-educated are hired preferentially, bumping less-educated into lower-level jobs or into unemployment.	What it signals is not clear.

Table 3—1 continued

<i>Indicator</i>	<i>Appropriateness as Indicator of Progress</i>	<i>Appropriateness as Indicator of Commitment</i>
Breakdown by schooling category	Necessary.	Interpretation is questionable since it is hard to know in general and without study which level of education is most valuable per dollar expended in a given society.
Breakdown by sex	Important, since within a society, one sex may be favored at the expense of the other.	(Same remarks as for progress)
Breakdown by geographic location	Useful as guide to equality of opportunity; helpful if poor are concentrated in certain geographic areas; no assurance that the poor in poor areas are the recipients.	(Same remarks as for progress)
Breakdown by socioeconomic status	Socioeconomic status is best indicator of extent to which recipients of education are the poor.	Care must be exercised since there are many reasons why high socioeconomic-status parents are more likely to acquire more education for their children, and these reasons may have nothing to do with society's commitment to education for the poor.

so on. I have, however, reached the conclusion after an extensive search, that data on flows through nonschooling education are simply unavailable in any general source (though they may be available in local or country data sources). UNESCO does publish annual data on the number of radio receivers per 1,000 inhabitants in each of 150 countries, but it does not give any indication of the spread of radio to the poor or the use of radio for purposes of education rather than entertainment.

School-Completion Ratios

School-completion ratios are available for 134 countries and territories in the UNESCO yearbook, of which most have data for more than one

year. The availability of these data corresponds to infrequent (for example, decennial) population censuses.

Literacy and Numeracy Rates

The 1980 UNESCO yearbook contains a special table (table 1.3) that is a "complete inventory of data on illiteracy from 1945 onwards held by the UNESCO Office of Statistics." Literacy data are not published regularly, but this one table summarizes all of the postwar censuses with literacy information. Figures are published for 158 countries and territories; 95 countries have at least two data points separated by between five and twenty years. Usually, both the number of illiterates and illiteracy rates are shown. Sometimes data are disaggregated according to sex, race, language, or other population subgroups.

Two features of the literacy rates bear mention: (1) There is no regular periodicity, and (2) literacy is not defined in a consistent fashion, either internationally or intertemporally.

Numeracy rates are not usually collected or regularly published.

Educational-Expenditure and -Finance Data

Information on educational expenditure is available in the UNESCO yearbook. The data include:

Total public expenditure on education: current versus capital, as percentage of GNP, and, as percentage of total public expenditure (available for 160 countries and territories);

Current expenditure by use (administration, teachers, and so on) (about 120 countries and territories);

Current expenditure by level of education, broken down by primary, secondary, and tertiary education; some include figures for special or adult programs (about 120 countries and territories);

Capital expenditure by level of education (available for 110 countries).

No compilation of educational-finance data is published.

Rates of Return to Education

Rates of return to education are available for many countries but only in scattered ad hoc studies for irregular dates.⁹ Changes over time have not been measured.

Breakdowns

Breakdown by educational level is usually available on an annual basis for most countries in the world.

Typically, literacy and completion rates are broken down by sex. Enrollment rates are not broken down by sex by UNESCO.

Geographic information is often found in individual countries' census volumes or statistical-data books. It is not, however, centrally compiled in a readily usable form.

Data on parents' socioeconomic status can be derived from only a handful of special-purpose, one-time studies.

Summary

A quick and ready view of educational-sector performance can be obtained for a large number of countries. Enrollment and expenditure data are compiled annually. For the other indicators, accurate and reliable data are available for a single point in time or scattered intervals. The only indicators that might conceivably be used to evaluate short-term changes in education indicators are

Total school-enrollment rates,

School-enrollment rates by school level,

School-enrollment rates by sex,

Total government-expenditure data on education,

Government-expenditure data on education by school level.

For assessing educational changes over longer periods, say, decades, many countries also have data on:

Total school-completion ratios,

School-completion ratios by school level,

School-completion ratios by sex,

Total literacy rates,

Literacy rates by sex.

In the short run, other indicators, whatever their merits and limita-

tions, can be used only in an ad hoc fashion on a case-by-case basis. The availability of data on the various indicators is sketched in table 3-2.

Education Indicators in Selected Countries

It is interesting to examine the evidence on educational indicators in countries with reasonably well-understood development histories.

Table 3-2
Availability of Data to Measure Various Indicators of Educational Progress

<i>Indicator</i>	<i>Available for a Single Point in Time?</i>	<i>Available on a Regular Basis over Time?</i>
School-enrollment rates	Yes, in most countries, in compilations of educational statistics	Yes, in most countries, in compilations of educational statistics
Nonschooling education	Yes, in many countries, from ad hoc studies	No, with few exceptions, not generally available on a regular basis
School-completion ratios	Yes, in many countries, from censuses or household surveys	Available for scattered dates but not annually
Literacy and numeracy rates	Yes, in many countries, from censuses or household surveys	Available for scattered dates but not annually
Educational-expenditure and -finance data	Expenditure data: Yes, in most countries, for public spending, from government budgets; Finance data: No, except for a few countries with ad hoc studies	Expenditure data: yes, in most countries, for public spending, from government budgets. Finance data: No
Rate of return to education	Yes, in many countries, from ad hoc studies	No, except for a few countries at irregular intervals
Breakdown by schooling category	Yes, where the above are available, it is according to level of schooling	Yes, where the above are available, it is according to level of schooling
Breakdown by sex	Yes, in most countries, in compilations of educational statistics	Yes, in most countries, in compilations of educational statistics
Breakdown by geographic location	Yes, where the above are available, in many countries, although not usually in compilations of educational statistics	Yes, where the above are available, in many countries, although not usually in compilations of educational statistics
Breakdown by socioeconomic status of parents	No, except in a few countries with ad hoc studies	No, except in a few countries with ad hoc studies

In a previous study (Fields 1980), I examined development progress and commitment in six LDCs.

In brief, their development histories are as follows:

Brazil, 1960—1970	Moderately high economic growth, rising inequality, falling absolute poverty;
Costa Rica, 1961 — 1971	Rapid economic growth, falling inequality, falling absolute poverty;
India, 1960/1961 -1968/ 1969	Very little economic growth, slightly falling inequality, rising absolute poverty;
Philippines, 1961-1971	Rapid economic growth, rising inequality, constant absolute poverty;
Sri Lanka, 1953-1971	Slow economic growth, falling inequality, falling absolute poverty;
Taiwan, 1964-1972	Rapid economic growth, falling inequality, falling absolute poverty.

Educational data for these countries, except Taiwan, are taken from The UNESCO *Statistical Yearbook*. Selected information for the other five countries appears in table 3—3.

When one thinks of educational progress in poor countries, one thinks immediately of literacy. In each of the five countries, the literacy rate went up, though in four of the five, the number illiterate increased.¹⁰ In these countries, literacy data were collected only at eight-to-ten-year intervals. No relationship between the countries' development performances and changes in their literacy rates is apparent over these intervals.

The second set of data refers to the highest level of schooling achieved by persons over the age of twenty-five. Costa Rica had the highest completion ratio, as may be expected from its relatively high per capita income. Contrary to expectations, Sri Lanka and the Philippines had lower proportions without schooling than Brazil despite being much poorer than Brazil. Information on schooling attainments is collected only infrequently, but over the intervals for which we have information, the data are intriguing—the greatest reductions in the proportions without schooling are found in the high-growth countries. Whether this is suggestive of a more-general association, and whether the observed relationship is cause or effect, are fundamentally important questions that are open to further investigation.

The third piece of information is educational distribution by sex. Costa Rica is the country with greatest parity—that is, literacy rates and

Table 3-3
Educational Change in Five LDCs

<i>Indicator</i>	<i>Costa Rica</i>			<i>Brazil</i>			<i>India</i>			<i>Philippines</i>			<i>Sri Lanka</i>					
Illiterates over 15 years old (million) [females in brackets]	1963	0.11	[.055]	1960	16.8 ^a	[8.5]	1961	187	[109]	1958	3.1	[2.3]	1963	1.5	[1.1]			
	1973	0.12	[.062]	1970	18.1	[10]	1971	212	[124]	1960	4.1	[2.1]	1971	1.7	[1.2]			
Illiteracy rate (percentage) [females in brackets]	1963	16	[16.5]	1960	39	[55.8]	1961	72.2	[86.8]	1970	3.6		1958	25.1	[30.5]	1963	24.9	[36.3]
	1973	11.6	[11.8]	1970	33.8	[36.9]	1971	66.6	[81.1]	1960	28.1	[19.1]	1971	22.4	[31.5]	1960	28.1	
										1970	17.4							
Highest educational level reached by population over 25 years old (percentage of total) [females in brackets]																		
No schooling	1963	20.6	[20.6]	1950	65.3	[69.6]	1961	75.5	[90]	1960	33.5	[37.3]	1963	32.3	[46.7]			
	1973	16.1	[16]	1970	42.6	[46.5]	1971	72.2	[86.6]	1970	19.8	[22.2]	1971	29.5	[40.9]			
Partial primary schooling	1963	49.1	[49.2]	1950	15.9	[12.9]	1961	15.8	[6.7]	1960	49.7	[48.9]	1963	39.6	[32.1]			
	1973	49.1	[49.8]	1970	26.7	[24.1]	1971	22.7	[11.7]	1970	56.4	[57.2]	1971	23.5	[20.5]			
Complete primary (only)	1963	19.6	[19.7]	1950	13.9	[13.5]	1961	6.3	[2.7]	1960	N.A.	[N.A.]	1963	6.9	[5.1]			
	1973	17.8	[17.7]	1970	19.4	[19]	1971	N.A.	[N.A.]	1970	N.A.	[N.A.]	1971	35.4	[28.2]			
Residual (those with some secondary or higher)	1963	10.7	[7.7]	1950	4.9	[0.8]	1961	2.5	[0.6]	1960	16.8	[13.8]	1963	21.1	[16.1]			
	1973	17	[6.5]	1970	11.3	[5.2]	1971	5	[1.6]	1970	23.8	[20.6]	1971	11.7	[10.4]			
Definition of primary (number of years)		6			8 ⁿ			5			6			5				
Gross-enrollment ratios																		
Primary	1960	0.94		1960	0.95		1960	0.4		1960	0.95		1960	0.95				
	1970	1.10		1970	0.83		1970	0.6		1970	1.14		1970	0.99				
Secondary	1960	0.21		1960	0.11		1960	0.2		1960	0.26		1960	0.27				
	1970	0.28		1970	0.27		1970	3		1970	0.50		1970	0.51				
Higher	1960	0.05		1960	0.02		1960	0.0		1960	0.13		1960	0.01				
								4										
Educational expenditure (current and capital) as a percentage of all public expenditure	1965	26.1		1965	11.9		1965	N.A.		1965	N.A.		1965	15				
	1972	29.1		1973	15.2		1974	26.2		1975	9.4 [«]		1973	12.2				
Educational expenditure (current and capital as a percentage of GNP)	1965	4.6		1965	2.9		1965	2.6 ^d		1965	2.5		1965	4.5				
	1972	5.5		1973	2.9		1970	2.8 ^d		1975	1.6 ^e		1973	3.6				

educational attainments are nearly the same for the two sexes. Disparities are greater in Brazil and the Philippines. The largest differences are in India and Sri Lanka. The pattern in these five countries is for equality of educational opportunity by sex to increase with level of GNP per capita. This reflects partly parents' discriminating in favor of their sons in poor countries and partly cultural differences in the particular countries considered here.

Fourth, we have statistics on enrollment ratios. UNESCO distinguishes *gross* and *net* ratios. The gross primary-school-enrollment ratio is the total primary-school enrollment (regardless of the age of students) divided by the population of primary-school age. The gross ratio can rise above one if there are many repeaters. The gross rates are reported annually. The net ratio eliminates from the enrollment figures those students who are not in the usual age category. These data are available for just a few countries at irregular dates and are not reproduced here. The gross enrollment data show a very mixed group of countries—Costa Rica, the Philippines, and Sri Lanka—in which the gross primary-school-enrollment ratio rose and approached or exceeded 1. Primary-school enrollments rose in India too, though with a smaller proportion of the school-aged population involved. The reported decline in primary enrollments in Brazil is anomalous in a fast-growing country but consistent with the unevenness of the Brazilian development model.

Finally, information is available on educational expenditure. Looking first at educational expenditure as a percentage of the government budget and of GNP, only Costa Rica's rose in both categories. In Brazil the share of educational expenditure in the national budget increased, but it remained the same percentage of GNP. In countries with two very different development histories—the Philippines and Sri Lanka—education lost out relatively. Turning to the composition of educational expenditures, divergent patterns also emerge. In Costa Rica, Sri Lanka, and to a lesser extent, the Philippines, a relative redirection of educational expenditures occurred away from primary, and in favor of secondary, education. Only in India did the share going to primary education rise. The last piece of educational-expenditure data is relative cost of different levels. That measure shows a rising relative cost of higher education in Sri Lanka and a falling relative cost in Costa Rica and India. India, though, continues to have the highest ratio of higher-to-primary education expenditures.

Note, finally, the categories for which we do not have data: recipients of apprenticeship and other nonschool education, numeracy rates, education-finance data, rates of return to education, breakdown by geographic location, and breakdown by socioeconomic status of parents.

Table 3-4 presents my qualitative judgment of changes over time in

the various education indicators. This information helps us to reach an overall assessment of comparative educational performance in these five countries. Despite a certain inevitable degree of arbitrariness, the results are suggestive of countries' educational performances.

Three countries' experiences are more or less as expected. Costa Rica looks most favorable, which is consistent with its favorable GNP level and growth and income-distribution records. India's essentially poor performance is consistent with its overall poverty and record of nongrowth. Brazil's record of aggregate educational growth with widening disparities parallels developments on the income-distribution front.

The educational record of the other two countries was somewhat unanticipated given their income-distribution experiences. On the one hand, the Philippines did relatively well in educational terms despite its poor income-distribution record. On the other hand, Sri Lanka exhibited less educational progress than might have been expected from its income-distribution performance. In both cases, the education results are in closer accord with GNP performance (high in the Philippines, low in Sri Lanka) than with income-distribution performance.

From this examination of five countries' education and development performances, no unambiguously favorable or unfavorable cases appear; no obvious instance of commitment or lack thereof is located. It is interesting that what seems to emerge is a closer relationship between educational performance and aggregate economic growth than between educational performance and distribution (in terms of either relative inequality or absolute poverty). This relationship suggests that countries may make substantial progress in education when, and only when, they can afford to. It also calls into question the value of educational performance—at least as measured by the available indicators—as a guide to countries' commitment toward raising the economic status of the poor. These speculations are just that—speculations—and require more-rigorous formulation and testing on more-extensive data sets. Such an analysis merits close attention in future studies of education and development.

Toward Improved Data Availability and New Indicators

How can improved data for assessing educational progress and commitment be provided? The following paragraphs present my recommendations.

1. *Reduce Reporting Delays.* Some of the indicators of educational performance described in preceding sections are conceptually clear and

easily calculable. In fact, these are largely the indicators for which accurate information is already frequently available on a regular basis. In some countries, the usefulness of these indicators is limited by reporting delays. Technical or financial assistance to speed the processing of such data would be helpful.

2. *Develop Standardized Measures.* Both within and across countries, concepts vary and measurement procedures differ. More-useful information could be gotten without much difficulty in the future if measures were standardized—for example, literacy and numeracy rates. One simple but effective technique for measuring literacy in a survey situation is to hand a person a card that reads, "Write your name here." If the respondent writes his name, he is said to be literate. While this is overly simplified and does not reflect functional literacy as closely as one might like, it has the great virtue of easy administration. Perhaps more-sophisticated tests could be devised, not only for literacy but also for numeracy and other skills. Standard questions like this could be made a part of every future population survey or census.

3. *Improve upon the Measurement of Nonschooling Education.* School data, being easiest to obtain, are most often published. Surveys often produce valuable data on literacy or other educational achievements. However, in recognition of the failures of some adult-literacy programs and the successes of some nonliteracy-based skill programs such as agricultural extension and radio education, efforts need also to be made to measure nonschooling education and skill acquisition. People might be asked whether they had participated in a formal training program, been visited by a government extension officer, or regularly listened to educational radio. As with literacy and numeracy rates, standardized questions on nonschooling education could be integrated into future survey efforts.

4. *Cross Classify Existing Measures by Socioeconomic Status.* Measures like school-enrollment ratios or literacy rates do not tell us to what extent the poor benefit from educational programs unless these data are broken down by recipients' socioeconomic status. Educational information from household surveys can and should be tabulated in relation to such socioeconomic status measures as family income, parents' occupation, parents' education, and (in the case of farm families) land and cattle ownership. For example, households in an income-distribution survey could be classified according to their socioeconomic status into quintile groupings; the school-attendance patterns of each quintile's children could then be tabulated. As an indicator of education's contribution to development, it is at least as important to have information on which particular families benefit from education as it is to know how many have benefited. From the perspective of using educational data in antipoverty

planning, the lack of socioeconomic-status detail is the most serious deficiency in the available education data.

5. *Do Not Publish Conceptually Difficult Data.* Some indicators require sophisticated users for successful implementation. An example is social-rate-of-return analysis. Anyone with graduate training in economics can calculate social rates of return to different levels of education. Few, however, know how to modify rate-of-return calculations according to particular local circumstances so as to produce meaningful data. Unfortunately, in the field of education, social programs and policies can and have been misdirected by listening to high-sounding social-cost-benefit calculations made by pseudo—social scientists. In this area, a little education in economics is worse than none. Any attempt to procure social rates of return for a large number of countries on a regular and timely basis can be expected to produce little useful information.

6. *Do Not Construct a Composite Index of Educational Performance.* We do not yet have a firm enough basis for deciding which factors to include and which to omit. Any attempt to assign weights to the included factors would be unsatisfactorily arbitrary. Then too, we do not have internationally comparable data with which to measure the included factors. In the present state of our knowledge, too much information would be lost and too little gained from a composite index to warrant its use.

Social-Cost-Benefit Analysis in Educational Planning

The basic idea of social-cost-benefit analysis in education is to relate the present value of the stream of social costs of additional education to the present value of additional social benefits. As a criterion for social decision making, cost-benefit analysis follows a familiar and basically sound economic principle—namely, that society should allocate resources to the activity that offers the greatest marginal social benefit (defined broadly) per dollar expended.

The essential requirement for project-planning and -appraisal procedures in education as in other fields is that they be sensitive to improvements in living conditions and to unfulfilled needs of the poor. Social-cost-benefit analysis can be a helpful tool in evaluating the extent to which a particular country's educational program has contributed, or will contribute, to the development effort.

A good, thorough social-cost-benefit analysis would be based at least on the following features:

Statement of Objectives. The country's development goals should be

clearly stated. Presumably, many countries' lists of objectives would give first priority to the alleviation of absolute economic misery.

Forecast of Beneficiaries. In the usual course of things, programs are justified on the basis of number of beneficiaries. Also important here is a characterization of the beneficiaries in terms of socioeconomic status. It should be shown that the beneficiaries are drawn from the target group; fears that educational expansion cater to the elites should be allayed.

Projecting Size of Benefits. To assess the economic benefits from a proposed program, projections are needed on what the newly educated persons will do. What type of work will they find, and how much will they earn from it? How much more productive with education than without will they be at that work? Are other persons without education likely to be displaced, and if so, what will they do instead? Education officials and manpower planners need to work hand in hand in this area.

Magnitude of Costs. Both the direct costs of education and the opportunity costs must be figured in. Often, for an educational project, the relevant comparison is with the costs of some other educational project—for example, the opportunity cost of educating one additional student for one year at a university is X fewer elementary-school pupils.

Incidence of Costs. School fees are typically a fraction of the total cost. The incidence of fees and foregone earnings parallels the incidence of benefits. However, the incidence of other direct costs must also be estimated. In this area, features of the tax structure such as its progressivity or regressivity and overall budget surplus or deficit enter. It is probably the case in many LDCs that taxpayers as a whole, including many poor families, help to subsidize the education of the few, drawn disproportionately from the middle and upper classes.

Other Social Benefits. In concentrating here on the economic benefits, other noneconomic social benefits should not be disregarded. These benefits should be considered, even though they probably cannot be precisely quantified.

Compared with the preceding list, cost-benefit analysis of education as actually practiced is strikingly deficient. Table 3–5 describes what usually is done. It should be evident that the so-called social rates of return to investment in education leave a great deal to be desired. As conventionally computed, the average private and social rates of return neither ask the right questions nor measure the right phenomena.

Table 3-5
Cost-Benefit Analysis of Education in Practice

<i>Aspect of Cost-Benefit Analysis</i>	<i>Usual Treatment in Literature</i>
Stating objectives	Presumed goal in most cost-benefit studies is to raise output, not reduce poverty; these may conflict; education's potential contribution to poverty reduction is frequently not discussed directly.
I	
Forecasting beneficiaries	Number of beneficiaries usually is taken into account; composition of beneficiaries is usually ignored.
Projecting size of benefits	Usually assumes that marginal benefits equal average benefit; this is unjustifiable in a labor-surplus context.
Quantifying magnitude of costs	Does a good job.
Estimating incidence of costs	Sometimes it enters as an afterthought but most frequently is ignored.
Considering other social benefits	Sometimes it is done; may be used to override cost-benefit circulations.

Conclusions

In this chapter, I have considered various aspects of education as an indicator of countries' progress and commitment toward helping the poor toward a better life and as a guide to development planning. I now draw together the findings and implications of the study.

Education is a lesser-order indicator of development performance. U.S. law specifies several specific indicators of development performance: promoting greater equality of income distribution, reducing rates of unemployment and underemployment, reducing infant mortality, controlling population growth, and increasing agricultural productivity. Of these, progress toward greater equality of income distribution through the alleviation of absolute poverty could be singled out as the most important indicator of development progress. I would place education alongside increasing productive employment and reducing infant mortality and ahead of improving agricultural productivity and limiting population. Used in conjunction with these other indicators, educational information is helpful in gauging countries' development performance. Like the other second-order indicators, however, education-sector performance should not be used alone.

The usual kinds of educational indicators provide useful information. The familiar indicators all measure the number of individuals who are receiving education at present or who received education in the past. We may reasonably presume that the poor benefit from educational growth, but direct evidence on the matter is scarce.

Considering the conceptual appropriateness of the various indicators and the availability of data for measuring them in LDCs, there are several applicable indicators of educational progress and commitment for which published data are available.

Data on access of the poor to education and changes in that access over time are available only in special studies for a limited number of countries. This kind of information cannot be used to measure educational performance or to allocate foreign assistance among countries. Future data-gathering efforts should give high priority to identifying the beneficiaries of education by socioeconomic level. In the few instances for which this information is already available, it should be used on a case-by-case basis.

In an examination of various educational indicators in five LDCs, no consistent pattern emerged. Each country did well according to some indicators, poorly according to others. Rapidly growing countries registered the greatest educational progress. The relationships between indicators of educational performance and of income distribution were weaker.

The reporting of data for assessing educational performance can be improved in a number of ways including reducing reporting delays, developing standardized measures, improving upon the measurement of nonschooling education, and cross classifying existing measures by socioeconomic status. It would not be helpful at the present time to publish data on certain hard-to-interpret measures such as social rates of return to education or to attempt to build a composite index of educational performance.

Education analysts, both in LDC governments and in foreign-assistance agencies, need to conduct more-sophisticated cost-benefit studies of education's contribution to development, paying particular attention to education's role in alleviating poverty. Yes, societies can have too much education, even when too much is very little, if they spend more for education on the margin than the least educated person is able to contribute to social and economic objectives. While cost-benefit analyses¹¹ should consider the multiplicity of development objectives in LDCs, \ upgrading the economic position of the poor should be paramount. The_j information needed to evaluate existing education programs includes data on numbers of recipients, who they are (in terms of socioeconomic status), how much it costs to educate them, who pays the costs, what type of work they do after completing their education, and how much that work pays off to society. Rarely do cost-benefit studies even attempt to deal with the majority of these concerns.

To be a useful tool for deciding on aid allocation, cost-benefit analyses must accurately reflect actual labor-market circumstances. Educational

planning should take full account of employment gains and wage improvements in contributing to the alleviation of poverty. Some of these improvements may be long term through creation of a high-level scientific and technical infrastructure that will increase economic growth, employ some of the poor in more-productive and better-paying jobs, and stimulate the demand for goods produced by those left behind in traditional sectors. Others may be shorter term, producing immediate agricultural extension and on-the-job training, rapid improvements in adult education, and widespread gains in literacy among children. It is vital that the labor-market and antipoverty effects of educational programs be justified quantitatively and in relation to other alternative uses of resources and not just in the abstract. To come to a sound decision on which among the myriad of possible programs are most worthy of support, it is not sufficient to merely list but not evaluate the presumed benefits of education or to omit mention of opportunity costs.

Additional foreign assistance should not be granted solely on the basis of demonstrated progress and commitment in the field of education. Countries may have succeeded in the past and may continue to do so precisely because they are already advancing rapidly and can afford to devote resources to education. Use of educational indicators as criteria for allocating foreign assistance would be expected to create incentives, but they may not be the right ones. Some countries might misrepresent or even deliberately falsify data if the figures may be the basis for higher aid. In this case, countries' progress and commitment in the field of education will become virtually unmeasurable. Even more dangerous would be if countries actually do something unjustified to get more aid. For example, suppose an aid agency offered to match countries' new technical-education expenditures dollar for dollar. It is easy to imagine resources' being shifted from agriculture and health to education. This might be appropriate in one country and disastrous in another. No responsible decision maker can really claim to know which is the most effective use of resources in general. Until we know what policies work under which sets of circumstances, educational progress and commitment should be used as criteria for allocating aid only with the greatest care.

Notes

1. The landmark volume on education's role in development is that of Anderson and Bowman (1966).

2. Economists define merit goods as products and services that are of inherent value to society and that merit scarce public resources because the private sector does not provide enough of them.

3. This is not true of social indicators that relate to higher-order wants. Increasing absolute incomes of the poorest is, I submit, a higher-order indicator that may be treated by itself. Other higher-order indicators such as the upgrading of dietary standards in malnourished societies, reductions in infant mortality, declining morbidity, and increased longevity need not be considered in relation to other measures either. For these, more is preferred to less.

4. In the interests of brevity, much supporting documentation from an earlier draft of this chapter is omitted.

5. This literature is surveyed in Turnham (1971) and Psacharopoulos (1978).

6. The cross-sectional approach is frequently associated with Harbison. See Harbison and Myers (1964) and Harbison (1973). Time-series information may be found in the UNESCO *Statistical Yearbooks*.

7. In addition, other indicators, not treated here, include number of teachers, teacher-student ratios, dropout rates, and breakdowns of enrollments by age.

8. An additional difficulty is that socioeconomic-status data probably cannot be gotten reliably from school data but would require a supplementary household survey.

9. The evidence through the early 1970s is synthesized by Psacharopoulos (1973).

10. I am uncertain about the reliability of the Philippines data since it is inconceivable that the number illiterate could have increased from three to four million in just two years (1958-1960).

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