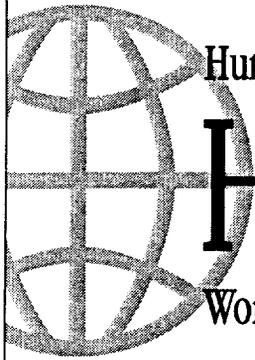


16130



Human Capital Development

HCD

Working Papers

**What Is Education Worth?
From Production Function to Institutional
Capital**

Robert Picciotto

November 1996

HCDWP 75

Papers in this series are not formal publications of the World Bank. They present preliminary and unpolished results of analysis that are circulated to encourage discussion and comment; citation and the use of such a paper should take account of its provisional character. The findings, interpretations, and conclusions expressed in this paper are entirely those of the author(s) and should not be attributed in any manner to the World Bank, to its affiliated organizations, or to members of its Board of Executive Directors or the countries they represent.

**What is Education Worth?
From Production Function to Institutional Capital**

by
Robert Picciotto

Abstract

The paper challenges the production function model of educational evaluation and proposes a new paradigm reflecting the lessons of experience and enriched by the new institutional economics.

The current evaluation methodology is dominated by physical asset creation and school attendance rather than economic efficiency or social development considerations. It is rooted in human capital theory which does not acknowledge the role of families and communities; neglects the opportunity costs of children's time; and assumes away labor market imperfections. By treating education strictly as a market good, it induces faulty institutional design.

By contrast, a neoinstitutionalist paradigm would unbundle the various functions of education according to the kinds of goods produced. It would recognize the role of hierarchy and participation in primary education. It would use collective action theory to overcome the "free riding" problems inherent in large scale public systems. And it would emphasize selectivity, strong market linkages, and cost recovery for market oriented training.

By focusing on institutional development, the new conception of education would move economic analysis of education projects beyond advocacy and contribute to improved educational policies and sounder management of scarce fiscal resources. Learning about learning would become central to the World Bank's role.

Under the new paradigm, co-production systems involving the public sector and the civil society would be piloted. Use of new technologies would be pioneered. And a pluralistic sector assistance strategy would be adopted spanning early child development and continuing education; formal systems and private sector involvement; and basic education as well as university development and research.

Contents

Introduction	1
Evaluation Findings.....	1
Education Management and Human Capital Theory.....	2
Institutional Design Parameters	5
The Development Challenge in Education.....	7
Lack of Systematic Evaluation.....	8
What Next?.....	9
References	11

"The worth of a State, in the long-run, is the worth of the individuals composing it; and a State which postpones the interest of ... mental expansion and elevation ... will find that with small men no great thing can really be accomplished."

John Stuart Mill
"On Liberty"

Introduction

Quality assurance addresses a deceptively simple question: what is the project or the program worth? Current methodologies in the education sector, dominated by the production function metaphor, still face strong resistance. This may explain why it has taken a very long time for economic analysis to take hold in the sector.

My intent is to explore the boundaries of the current approach and to suggest that a new paradigm may be needed, building on best practice, reflecting the lessons of experience and enriched by the new institutional economics. A reconsideration is needed not only to help overcome the objections raised by educators and policy makers but also to improve the quality of appraisals and retrospective evaluation findings.

Evaluation Findings

First, what does the Bank's educational lending record show? According to OED, 87 percent of Bank financed education projects closed from 1990 to 1994 have had satisfactory outcomes, a far more favorable result than the average for all sectors, about 63 percent (World Bank, 1994). These estimates require careful interpretation.

Simply put, evaluation outcome ratings for education projects reflect overgenerous judgments of relevance, efficacy and efficiency. Specifically, relevance of objectives is rated in terms of a policy framework which gives considerable weight to increased access to educational opportunity and neglects institutional factors.

In addition, efficacy (i.e. the degree to which objectives are met) is rated in relation to the achievement of project objectives dominated by physical asset creation rather than learning. Finally, efficiency is not evaluated systematically, i.e. unit costs are rarely tracked; cost benefit analysis is often overoptimistic if done at all and fiscal aspects are not normally examined critically.

This is because evaluation findings are heavily influenced by the policy norms which prevailed when the projects were approved. The above evaluation results refer to World Bank financed projects which were approved in the early eighties. Since then, a reorientation of education lending has taken place. Fiscal constraints, policy research findings and greater insistence by the Bank on demonstrable educational achievements "on the ground" have induced project designs which incorporate more demanding objectives in terms of educational quality and institutional reform.

Already, these more demanding standards are translating into deteriorating measures of projected outcomes. The current share of problem projects in the active education portfolio is about 18-20 percent, close to the Bank average for all sectors. Evidently, a shift in the way education projects are designed and evaluated is underway and even more fundamental shifts may be in store. In any event, there is no room for complacency as far as the track record is concerned. Consider that a meager 36 percent of the education projects closed in 1990-94 have had a substantial institutional development impact.

Education Management and Human Capital Theory

Traditional development economics, according to which the state commands the heights of the economy and public investment is the engine of growth, is in full retreat. Yet, it has taken refuge in the human resources sector where the need for a major role for the state is not controversial and the priority of human capital investments has been amply confirmed by the outstanding success of East Asian countries' combination of market friendly and people friendly policies.

Conceptually, the production function model is consistent with the way public education is organized. From a systems analysis perspective, a school is hardly distinguishable from a canning establishment or a weaving factory. Just as an industrial plant, it requires capital in the form of buildings and equipment; it adds value to raw material (human, to be sure); it involves pre-specified production routines and it screens the resulting "output" against pre-determined quality standards.

According to this model, education occurs as a result of the application of a variety of "inputs", e.g. lectures, textbooks and other pedagogical aids, assembled by workers (teachers) and controlled by administrative personnel. Based on this model, the educational system is readily described by input-output tables; educational benefits are estimated in terms of labor market values; and administrators who stand at the top of the educational hierarchy feel entitled to claim a substantial share of educational expenditures.

Yet, the evidence on which the technical-functional model rests is far from convincing. The connections between educational expenditures and learning outcomes are weak as the Washington D.C. experience demonstrates. Learning is not simply a matter of plentiful funding. Skillful pedagogy, well crafted curricula or good teaching aids help. But other factors in the cultural and social environment may be as important. For example, early deprivation and lack of adequate stimulation of pre-school children hold back the efficiency of primary and secondary education. The family and community environment is a significant contributing factor to educational outcomes. And there are significant externalities associated with primary, especially female, education: lower infant mortality, better family nutrition, improved use of public health facilities, etc.

Inadequate pupil motivation, connected to the economic and social situation of parents, leads to absenteeism and lack of discipline. Weak linkages with the community may create social tensions and interfere with effective school management. Finally, lack of shared objectives between parents, teachers and school administrators may undermine performance incentives and contribute to poor results. Conversely, according to James S. Coleman (1987), "social capital is

the raising of children in the norms, the social networks and the relationships between adults and children that are of value for the child's growing up..."

By ascribing all the productivity increments associated with new skills exclusively to education outlays and by neglecting the opportunity costs of children's time (Mason and Khandker, 1996), very high rates of returns to educational investments are routinely produced and publicized, thus contributing to neglect of social and community aspects of educational policy. Similarly, macro studies of the effects of education on the economy employ an aggregate production function model which assumes that differential wages offered to workers with different levels of formal schooling is an accurate proxy for the contribution of education to their productivity.

While intuitively appealing, the model does not consider the extent to which education plays a "certification" role which allocates workers within a relatively fixed distribution of jobs without creating them. In any event, wages reflect productivity only if labor markets are competitive and in equilibrium, a rare occurrence. Where workers compete for individual jobs in a queuing process, educational qualifications may have more weight in employment than may be justified by productivity considerations. One is reminded here of Mark Twain's warning that young people should not let schooling get in the way of their education.

Detailed studies seeking relevant evidence that education directly improves productivity have not been conclusive. On the other hand, contrasting sociological doctrines according to which education is only used for socialization and/or for sustaining class distinctions have not been convincingly confirmed by historical evidence (Rubinson and Browne, 1994).

Evidently, reality is more complex than the models currently in use. Recent research, based on institutional analysis, is leading to a reformulation of existing theories by moving away both from Panglossian input-output analysis and from ideologically driven explanations of social stratification. In parallel, policy makers—faced by angry and frustrated parents and severe fiscal constraints—are searching for pragmatic solutions to serious performance problems in education management.

Institutional Design Parameters¹

Some of the solutions to these problems lie upstream of investment analysis, i.e. within the domain of educational policy, programming and institutional development. Multi-disciplinary analysis must be brought to bear on these crucial aspects: evaluation of education projects is not simply a matter of cost-benefit analysis.

Program design must be informed by assessments of overall educational performance against societal objectives; by evaluations of the relevance of the objectives themselves and by judicious design of institutions to deliver the needed services. What then is public education for? What kinds of goods is it expected to produce? And what are the implications for the institutional design of education programs and projects?

Public education has three functions. First, a nation building function: the inculcation of civic virtues and the provision of talent needed for government service. Second, a social function: the strengthening of local communities and the creation of social capital. Third, a market oriented function: the production and delivery of technical, clerical and managerial skills needed by the economy. Confusion about these roles inevitably leads to faulty program designs and misunderstandings.

The prevailing capital theory model of human resources assesses education as if it were solely a market good. From this perspective, the primary educational production system is not properly organized as it flouts nearly all cherished free market principles. It is a near-monopoly and, where it is compulsory, it offers little scope for consumer choice. Pricing is seriously distorted by government intervention. Access is often universal rather than merit based.

Yet, analytical focus on such aspects may be misplaced if free primary schooling along with roads and the rudiments of a local administration is perceived as a basic building block of nation building. According to Eugen Weber (1996), prior to mass education, French rural citizens had no common language; the French state had no cohesion and the French nation had no

¹ Picciotto, 1995.

common heritage. This has been the experience of other countries as well so that public education has gradually become an instrument of legitimacy for all nation states. An institution already inseparable from citizenship, basic education is now acquiring a universal character given the emergence of education as a basic human right.

A pure market model would be inappropriate given these externalities. Instead, primary education should probably be viewed more as a public good than as a private good. From this perspective, in order to be effectively managed, primary education needs hierarchy and also participation more than it does market characteristics. And it is with respect to participation—i.e. with respect to the voice which local communities and parents enjoy in the management of primary education systems—that current institutional designs leave much to be desired.

Albert O. Hirschman was the first prominent economist to observe that the availability of exit options for consumers of public education led to the exodus of the most influential, quality conscious and vocal families, thus depriving the school system of the recuperative function of participation (Hirschman, 1970). Agency theory also suggests that control of teaching quality through hierarchical means in large systems is prohibitively expensive due to information asymmetries. Hence, the economic justification of community involvement: it reduces the heavy transaction costs associated with central monitoring and control mechanisms.

Equally, the travails of educational administrations and the behavior of teachers' unions are best examined with the aid of "public choice" theory. In particular, problems of "free riding" need to be dealt with through decentralization, devolution, selective incentives and effective linkages between budgeting and evaluation. Ultimately, the logic of the new public management approach is to link budget allocations and teachers' salaries closely to students' achievement.

Externalities are less central in secondary and tertiary education (especially in vocational streams): access to these levels is typically rationed and the benefits are captured in large part by the graduates through their lifetime earnings. Therefore, education at these levels has the character of a toll good and the institutional arrangements need to reflect this characteristic by emphasizing selectivity, strong market linkages and cost recovery.

In particular, educational policy should encourage private provision of services at the secondary and tertiary levels. And from an institutional perspective, coproduction and hybrid forms of organization should be explored to secure an appropriate balance between market, participation and hierarchy. Equally, there is room for educational arrangements targeted on the special needs of the modernizing state itself. For without an elite corps of civil servants, the quality and integrity of overall governance is bound to suffer. Here, neither the market nor participation can play a major role. The organizational focus is hierarchy, i.e. the state, without shame and without reservations.

In sum, the analytics of human capital theory need to be connected to the new institutional economics. The true purpose of education projects is institutional development. Accordingly, evaluation criteria should be designed to measure institutional capacity rather than physical capacity. Ultimately, schools are not factories. They are building blocks of the modern state. Unless this is translated into institutional design benchmarks, the mismatch between the societal purposes of education and current methods of program and project evaluation will continue to create discomfort and misunderstanding.

The Development Challenge in Education

There is no escaping the fact that education in most developing countries suffers from serious performance problems with respect to quality, equity and access.

High repetition, especially in the lower grades, is pervasive and reflects inadequate learning. Latin America spends \$2.5 billion a year to teach some 20 million repeaters (and at the current rate of improvement, repetition will cease to be a problem only forty years from now); in Jamaica which follows a policy of promotion by age, a third to almost a half of primary school graduates are functionally illiterate (Wolff, Schiefelbein, and Valenzuela, 1994). Mean reading, mathematics and science achievements of 14-year old students in developing countries are much lower than in developed countries—in some cases by more than one standard deviation. In

Burkina Faso and other Sahelian countries mean achievement scores sometimes approach randomness, suggesting that students are learning very little (Jarousse and Mingat, 1993).

Relatively low enrollments among girls, the poor and minorities, particularly in rural areas, still characterize education in most developing countries. Despite major gains in enrollments during the last fifty years, the absolute number of children who receive no education at all is increasing given galloping demographics in the very countries which can least afford it. The "gaps" also reflect cultural norms and the economic necessity of child labor in poor households. Conversely, education can contribute to development not solely in terms of its impact on individual productivity but through integration of women and children into the polity, a worthwhile objective in its own right.

Evidently, the severe problems of public sector management which have led policy makers to rethink the role of the State in the economy have not spared the human resources sector. There is growing recognition of the obstacles to reform posed by vested interests. The use of performance budgeting and voucher systems is being tried. Involvement of private, community and voluntary organizations is spreading. And there is growing interest in experimenting with new ways of acquiring and disseminating knowledge through new technologies.

Lack of Systematic Evaluation

Existing inefficiencies and inequities have proven very resistant to change in part because educators and politicians have stubbornly resisted to subject educational expenditures to the discipline of performance evaluation even though, ironically, such discipline is the logical consequence of the production function approach to public education.

The weakness of evaluation practices for education investments has been amply documented. According to George Psacharopoulos (1995), "two reasons explain why myopia at the program justification stage can lead education programs into blind alleys. First programs are justified based on intuitive logic without the backing of scientific evidence. Second, the people justifying the project are often unaware of or simply too busy to absorb the latest research and

evaluation findings on the subject." As a result, ex-ante and ex-post evaluation methods currently practiced focus more on asset creation and enrollments than on educational achievements. Furthermore, they tend to neglect the actual utilization of skills and their market value.

Until recently, the World Bank was no exception to this state of affairs. For 146 education projects evaluated between 1990 and 1995, there were no projects for which a rate of return was calculated. I have had personal experience of the stubborn opposition to economic analysis of education projects. I was reprimanded for carrying out rate of return analyses for two vocational education projects (Chile and Thailand) in 1964: Mr. Duncan Ballantyne, the then Education Projects Director, decreed that such analyses had no place in appraisal reports presented to the World Bank's Board.

Promising change is underway. Mr. James D. Wolfensohn's intolerance of shoddy investment analysis, triggered by the OED/OPR review of economic analysis in staff appraisal reports (World Bank, 1995), has led to improved managerial attention and training. Recent appraisal reports (Sri Lanka Teacher Education; Tunisia Second Training and Employment Project; India Second District Primary Education Project and Indonesia Secondary School Teacher Development Project) include competent quantitative analyses of project costs and benefits. A best practice example is the Second Basic Education Project in the Dominican Republic. But this is only a start.

What Next?

Given the enormous public resources invested in education, the increasing concern with the social impact of public expenditures and the fiscal problems of developing countries, education reform now ranks high on the Bank's policy agenda. Rigorous analysis and insistence on decent economic and social results should characterize the Bank's posture. However, the success of education reform often hinges on political economy considerations. Therefore, Bank analysts will have to adopt a broad based, multi-disciplinary and participatory approach to education sector analysis.

In particular, in order to facilitate the relevance and impact of the policy dialogue with member countries, the human capital approach should be enriched by institutional economics. This implies a recognition that education fulfills a variety of roles and needs to be judged in terms of the specific objectives which have been set by policy makers. The use of schooling for nation building objectives should be factored in. The concept of social capital should inform organizational design, taking account of country conditions.

Economic analysis of education projects should move beyond advocacy and aim to contribute to improved educational policies and sounder management of scarce fiscal resources. This means going beyond the strictures of fixed coefficient educational models, and recognizing the centrality of social factors. Labor market analysis should help ascertain the limits of human capital methods of evaluation while social assessments of who really benefits from education should throw light on the consistency of programs with social goals endorsed by policy makers.

Conversely, within the logic of the current human capital approach, the time has come for economic analysis to "net out" the non educational factors which influence earnings (e.g. family background); to take account of the opportunity cost of children's time as well as educational achievement rates in the estimation of benefits; and most of all to gear economic analysis to dispassionate assessments of design alternatives rather than to the pressures of an archaic loan approval culture.

Finally, monolithic ways of approaching education should be avoided and learning about learning should be part and parcel of the Bank's role. A pluralistic approach should be adopted encompassing early child development as well as traditional schooling and continuing education; formal systems as well as private and voluntary initiatives; tertiary education and research as well as basic education.

Given its global character, the Bank should encourage international transfer of best practice as well as piloting and experimentation in order to explore the virtues of decentralization and autonomy in educational management; the potential of private enterprise in the provision of

educational services; the role of modern technology and distance learning and a closer linkage between learning achievements, teacher remuneration and budget allocations.

Thus, the voyage ahead is long, arduous and uniquely exciting. It is high time for educators, economists and other social scientists to get on board and to set sail.

References

- Coleman, James S. 1987. "Families and Schools." *Educational Researcher*, August/September.
- Hirschman, Albert O. 1970. Exit, Voice and Loyalty: Responses to Declines in Firms, Organizations and States. Cambridge: Harvard University Press.
- Jarousse, J.P. and Alain Mingat. 1993. "Options for Accelerated Development of Primary Education in the Sahel, IREDU-CNRS" France: University of Bourgogne.
- Mason, Andrew D., and Shahidur R. Khandker. 1996. "Measuring the Opportunity Costs of Children's Time in a Developing Country: Implications for Education Sector Analysis and Interventions." *Human Capital Development Working Paper (72)*, Human Capital Development, World Bank.
- Picciotto, Robert. 1995. "Putting Institutional Economics to Work: From Participation to Governance." World Bank Discussion Paper 304. Washington: World Bank.
- Psacharopoulos, George. 1995. "Using Evaluation Indicators To Track the Performance of Education Programs." in *Evaluation and Development, Proceedings of the 1994 World Bank Conference*, Operations Evaluation Department, Washington: World Bank.
- Rubinson, Richard and Irene Browne. 1994 "Education and the Economy" in Neil J. Smelser and Richard Swedberg, eds. Handbook of Economic Sociology, Princeton: Princeton University Press and Russell Sage Foundation.
- Weber, Eugen . 1983. "La Fin des Terroirs, La Modernisation de la France Rurale (1870-1914)." Fayard, Editions Recherches.
- Wolff, Laurence, Ernest Schiefelbein, Jorge Valenzuela. 1994. "Improving the Quality of Primary Education in Latin America and the Caribbean: Toward the 21st Century." World Bank Discussion Paper 257. Washington: World Bank.
- World Bank. 1994. Evaluation Results, Operations Evaluation Department, Washington: World Bank.
- World Bank 1995. "A Review of the Quality of Economic Analysis in Staff Appraisal Reports Approved in 1993." Operations Policy Department and Operations Evaluation Department, World Bank (mimeo).

Human Capital Development Working Paper Series

	Title	Author	Date	Contact for paper
HROWP45	The Costs of Discrimination in Latin America	Harry Anthony Patrinos	November 1994	I. Conachy 33669
HROWP46	Physician Behavioral Response to Price Control	Nguyen X. Nguyen	December 1994	M. Espinosa 37599
HROWP47	Evaluation of Integrated Human Resource Programs	T. Paul Schultz	January 1995	M. Espinosa 37599
HROWP48	Cost-Effectiveness and Health Sector Reform	Philip Musgrove	January 1995	O. Shoffner 37023
HROWP49	Egypt: Recent Changes in Population Growth	Susan H. Cochrane Ernest E. Massiah	February 1995	O. Shoffner 37023
HROWP50	Literacy and Primary Education	Kowsar P. Chowdhury	February 1995	M. Espinosa 37599
HROWP51	Incentives and Provider Payment Methods	Howard Barnum Joseph Kutzin Helen Saxenian	March 1995	O. Shoffner 37023
HROWP52	Human Capital and Poverty Alleviation	Gary S. Becker	March 1995	M. Espinosa 37599
HROWP53	Technology, Development, and the Role of the World Bank	Carl Dahlman	April 1995	M. Espinosa 37599
HROWP54	International Migration: Implications for the World Bank	Sharon Stanton Russell	May 1995	O. Shoffner 37023
HROWP55	Swimming Against the Tide: Strategies for Improving Equity in Health	Nancy Birdsall Robert Hecht	May 1995	A. Colbert 34479
HROWP56	Child Labor: Issues, Causes and Interventions	Faraaz Siddiqi Harry Anthony Patrinos	June 1995	I Conachy 33669
HCOWP57	A Successful Approach to Participation: The World Bank's Relationship with South Africa	Roberto Gonzales Cofino	July 1995	K. Schrader 82736
HCOWP58	Protecting the Poor During Adjustment and Transitions	K. Subbarao Jeanine Braithwaite Jyotsna Jalan	July 1995	K. Labrie 31001
HCOWP59	Mismatch of Need, Demand and Supply of Services: Picturing Different Ways Health Systems can go Wrong	Philip Musgrove	August 1995	Y. Attkins 35558
HCOWP60	An Incomplete Educational Reform: The Case of Colombia	Armando Montenegro	August 1995	M. Bennet 80086
HCOWP61	Education with and with out the State.	Edwin G. West	September, 1995	M. Espinosa 37599
HCOWP62	Interactive Technology and Electronic Networks in Higher	Michael Crawford Thomas Eisemon	October 1995	P. Warrick 34181

Human Capital Development Working Paper Series

	Title	Author	Date	Contact for paper
	Education and Research: Issues & Innovations	Lauritz Holm-Nielsen		
HCOWP63	The Profitability of Investment in Education: Concepts and Methods	George Psacharopoulos	December 1995	M. Espinosa 37599
HCDWP64	Education Vouchers in Practice and Principle: A World Survey	Edwin G. West	February 1996	M. Espinosa 37599
HCDWP65	Is There a Case for Government Intervention in Training?	Antonio Zabalza	March 1996	M. Espinosa 37599
HCDWP66	Voucher Program for Secondary Schools: The Colombian Experience	Alberto Calderón Z.	May 1996	M. Espinosa 37599
HCDWP67	NGO-World Bank Partnerships: A Tale of Two Projects	Toshiko Hino	June 1996	A. Thomas 31151
HCDWP68	The Disability-Adjusted Life Year (DALY): Definition, Measurement and Potential Use	Nuria Homedes	July 1996	L. Arias 35743
HCDWP69	Equitable Allocation of Ceilings on Public Investment: A General Formula and a Brazilian example in the Health Sector	Philip Musgrove	August 1996	Y. Atkins 35558
HCDWP70	The Economics of Language: The Roles of Education and Labor Market Outcomes	Barry Chiswick	September 1996	J Conachy 33669
HCDWP71	Agricultural Growth and Poverty in Pakistan	Rashid Faruquee Kevin Carey	September 1996	C. Anbiah 81275
HCDWP72	Measuring the Opportunity Cost of Children's Time in a Developing Country: Implications for Education Sector Analysis and Interventions	Andrew D. Mason Shahidur R. Khandker	September 1996	D. Ballantyne 87198
HCDWP73	The Full Social Returns to Education: Estimates Based on Countries' Economic Growth Performance	Alain Mingat Jee-Peng Tan	September 1996	J. Yang 81418
HCDWP74	Costs and Benefits of Bilingual Education in Guatemala: A Partial Analysis	Hary Anthony Patrinos Eduardo Velez	October 1996	J Conachy 33669
HCDWP75	What is Education Worth? From Production Function to Institutional Capital	Robert Picciotto	November 1996	R. Wiemann 84572