Education and Employment Research and Policy Studies: 
An Annotated Bibliography

This annotated bibliography provides a synopsis of books, articles, and other background papers on education and employment, produced by the Education and Employment Division, Population and Human Resources Department (PHREE), during 1991-93. It is included here as a prologue to the Discussion Paper Series now being produced by the Education and Social Policy Department (ESP). The bibliography was prepared by Carol E. Copple (Consultant).
The performance of labor markets is important for both the smooth functioning of the economy and providing accurate signals about labor supply and demand to the education and training sector. This examination of Bank country economic and sector reports from 1985 to 1990 finds increasing attention to labor market issues over time. Wages and unemployment are the issues most frequently and thoroughly treated in economic reports. Issues are treated most frequently and comprehensively in rapidly growing countries with high levels of human resource development (high primary enrollment rates). While the Bank has given attention to labor market issues in the analysis of country economic and education sector reports, these issues have not been accorded priority in the policy dialogues with government. The best predictor of attention to labor market issues in the policy dialogue is thorough analysis. The authors argue that more attention to labor markets early in the Bank-country dialogue will help build support for politically sensitive labor market reforms and lead to better integration of labor market issues into the policy dialogue.


While considerable attention has been given to the connection between trade and employment, much less attention has been given to the effect of this relationship on human resource development. This paper looks at how a country's choice of development strategies shapes incentives for the efficient use of resources in education and training. The authors examine the importance of export-led development to competition in factor markets and incentives for private and public investments in skills development. They are particularly interested in how competitive factor markets affect the efficient use of public resources in education and training. To address these issues, the authors compared macroeconomic trends and development strategies in six developing countries -- Egypt, Malaysia, Nigeria, South Korea, Thailand, and Tunisia. The findings suggest that outward-focused countries competing in a global economy encourage efficiency in human resources development.


While the movement from centrally planned to market economies will not eliminate the need for manpower planning, it will substantially change the roles manpower planners play and the techniques they use. They must become analysts of the labor market and now will be asked for information to (1) guide private decisions about training, (2) improve the management of training systems, (3) identify impediments to competitive labor markets, and (4) help rationalize public investments in education and training. The authors introduce techniques for manpower planning that acknowledge the dynamic nature of market economies. They reject the idea of forecasting manpower requirements, proposing instead to use labor market signals picked up by monitoring movements in wages and employment and evaluating training programs.


The rapid expansion of higher education in developing countries, coupled with economic problems, has created a crisis in financing. The impact has been most severe on institutions solely dependent on government funding. This book addresses the role that reform may play in easing these financial pres-
sures. The authors argue that increases in non-government funding will be important but insufficient to resolve the crisis. Three general measures are evaluated as potential solutions. Cost recovery through increased student fees will be critical to financial reform but could have some adverse effects on equity and access. Student loan schemes are potentially valuable, but evidence suggests that only a small percentage of students have benefitted and that a system of high tuition fees coupled with widespread loans would not be a feasible option in many countries. The third measure is generating internal profits through such means as providing ad hoc specialized courses, the sale of services to industry, and the commercial management of research and university assets. The authors suggest that government funding to universities should be structured to provide incentives for efficiency and that national service schemes be refocused and expanded as a form of cost recovery. To be successful, they argue, financial reform must entail increased non-government funding, and universities must be given both freedom and accountability in their management.


This paper examines the mechanisms through which governments, typically the dominant source of university finance, allocate resources to higher education. Governments restrict university behavior in three major ways: controlling student enrollments; forbidding revenue diversification; and limiting institutional discretion in allocating funding. In most developing countries, such government restrictions have placed institutions in a difficult position. Governments face the challenge of granting universities more autonomy over decision making, while ensuring accountability to funding sources. Potential solutions include using buffer funding bodies; changing the criteria for allocating resources; and transferring funds via students, through loans or grants, rather than directly to institutions. Reform of higher education finance in many countries will first require granting universities more autonomy in decision making. Then, a funding mechanism should be developed that transfers resources to institutions in line with actual costs of operation, provides incentives for efficiency, and encourages institutional differentiation so that universities are able to respond to local conditions and student and external demands.


This paper analyzes the efficacy of vocational training in Brazil. The authors reexamine the trend of negative results for vocational training noted since the mid-1950s and reach a different conclusion in this study. The paper examines vocational training trends world-wide and in Brazil; analyzes the extent to which vocational school leavers are employed in occupations related to their field of study in secondary school; and then uses the Mincerian earnings function to analyze earnings differences between leavers employed in subjects related to their field of study and those that are not and between vocationally educated workers and graduates of academic schools. The authors conclude that students who complete vocational school and work in related fields have significant earnings advantages over students who do not work in fields related to what they studied, and over students who complete academic schools.


This annotated bibliography features recent books, articles, and unpublished papers that were consulted in connection with the preparation of a general background paper entitled "Secondary Education in Developing Countries: Issues Review," by Bruce Fuller of Harvard University and Donald B. Holsinger of the World Bank. The majority of the items were pub-
lished in the years 1980-1991, and eight other relevant items have been included from the years 1974-1979.


This paper examines five methods to collect or estimate information needed to monitor the flow of a cohort of students through an educational cycle. Two of the five are not used in developing countries because of their expense and difficulty. A third is applicable only in countries where repetition is negligible. The remaining two methods are viable for estimating flow rates in countries where repetition is common. The Grade Transition Model is simple, has low data requirements, and provides accurate descriptions of how students move through a cycle of education where reliable data are available on enrollment and repetition by grade. The Age-Grade Model is used in cases where repetition data are lacking but where data on enrollment by grade and age are available. Because of its requirement for a more comprehensive data set, this method is more difficult to use and requires the use of a computer. If neither repetition-rate data nor age-grade data are available, transition rates may be estimated using linear programming models.


This paper was prepared as background material for a seminar on repetition and dropout sponsored by the Education and Employment Division of the World Bank. It attempts to evaluate the extent to which costs associated with investment in learning quality can be recouped through efficiency gains derived from reductions in repetition and dropout. It contains a set of simulations that address how reduction in repetition and dropout affects the total cost of providing for a cohort of students and how these reductions affect the cost of producing a single graduate. The simulations also compare the potential efficiency gains resulting from reduction in repetition and dropout to the amount of resources required to provide adequate educational materials. The Reconstructed Cohort Method is used to simulate the impact of reduction in repetition and dropout on cost per graduate and on total expenditures. The paper concludes by comparing the cost of reducing repetition and dropout with efficiency gains generated from the operation of a more efficient system.


Language policies affecting scientific education and research have important implications for educational efficiency and effectiveness. This paper analyzes the role of European and other languages in science education and in advancing scientific training and research in developing countries. The author draws three conclusions. First, policies favoring indigenous languages for scientific training do not necessarily create a "language barrier" to international scientific communication and they do not inhibit the production of mainstream, mainly English-language scientific research, or use of English scientific information. Second, in countries where a foreign language has been adopted for all science instructions, poor foreign-language proficiency is an important cause of high wastage and repetition rates, and low achievement in scientific and technological courses. Finally, use of indigenous languages at least at the primary level may promote learning of science and related subjects. An indigenous language will not develop as a language of ordinary scientific discourse unless it is employed for instruction and material welfare.

This paper examines Kenya as a case study of the political, economic, and educational circumstances that have prompted the establishment of private educational institutions, the functions of these institutions, and their relationship to the state. Private higher education in Africa has been constrained by poverty and by a belief that private involvement would exacerbate inequalities in educational provision. Accordingly, it does not account for a significant proportion of university enrollments. Kenya has the largest number of private institutions. They provide professional training in fields of employment opportunity but also offer an education that emphasizes character-building functions of higher studies. Efforts to foster private higher education should focus on creating an appropriate policy framework for national accreditation and supervision of institutions as well as financial support for construction of student residential facilities, loans to poor students, and funding for staff training. Support for private higher education should strengthen the regulatory functions of government in ways that preserve the independence of private institutions.


This analysis focuses on the World Bank's strategies for the support of higher education, the patterns of involvement in the higher education sub-sector, and what the sub-sector and borrowing countries have sought to accomplish. The number, kinds, and regional distribution of project investments during the last three decades are described. Projects since 1980 are examined in relation to sub-sectoral, inter-sectoral, and sectoral investment strategies. The Bank's experience with lending for higher education policy reform is also discussed. The author emphasizes the importance of formulating project interventions in the context of development of the higher education sub-sector as a whole, of sustaining comprehensive assistance for institution-building and quality improvement, and of methods for reducing the political costs of implementing policy reforms.

This paper examines the policy environment for investment in university development in Uganda, with special attention to the needs of Makerere University. It first examines the higher education sector in Uganda; government support for higher and university education; and the governance, management, unit costs, internal efficiency, and quality of programs of Makerere University. It then discusses how the lack of resources to support public universities, poor employment opportunities of graduates, equity concerns, university-government relations, and other factors affect higher education policy reform. The authors present a strategy for revitalizing university education where reforms are proposed to promote coordinated development of public and private higher educational institutions and to generate new resources to support them. They also suggest immediate and medium-term measures necessary for sustainable national and donor investment in university rehabilitation.


This paper examines the Bank's support for Secondary School Science. It tabulates supported projects and their components for the period FY1963-90 by region and fiscal period, summarizes project expenditures, analyzes teacher training and its components, identifies problems found in the provision of equipment and consumables, and evaluates the outcome of secondary science investments. Support for secondary school science education has recognized that laboratories are important, but has placed limited emphasis on the mechanisms that make science laboratories educationally productive. The projects analyzed tend to empha-
Annotated Bibliography, 1992

size buildings and equipment at the expense of training. Expenditures classified as "teacher training support" are often for physical facilities. The extensive provision of equipment without related teacher training is unsuccessful. The low level of support for such training in the African region, along with insufficient maintenance and unsatisfactory construction, may explain failures there. Too much emphasis is placed on insignificant goals, particularly adherence to schedules and budgets, and not enough on the goals of improving scientific knowledge and attracting students to science-related careers. Suggestions on how to correct some of these problems are included.


Analyzing the various goals adduced for unemployment insurance, the author considers which make sense. He lists the parameters of typical unemployment insurance programs and their ranges in industrial countries. Evidence on the economic impact of these parameters provides planners with a basis for constructing unemployment insurance programs elsewhere. While experience and evidence from developed economies may carry over into developing economies, the author suggests that the special characteristics of many developing economies, such dual labor markets, imply the need for caution in introducing unemployment insurance programs in these economies. He suggests several lines of research to answer questions about the validity of the consumption-insurance goal in developing countries and about appropriate structures of taxes and benefits.


Among the substantial economic and social returns of educating women is the fact that educated mothers have more educated children. In addition, educating women slows population growth by creating new economic opportunities that compete with childbearing and child care. Yet, many countries invest less in educating women than men. To create a stronger case for parents' sending their daughters to school, policy makers should recognize the costs and benefits from the parents' perspective. To help policy makers, the paper analyzes the benefits from female education (who gains and in what ways) and the constraints (direct and opportunity costs, reflecting economics and tradition). It then outlines promising approaches for increasing female education, focusing on education policies to lower costs, improve quality, and increase access to allow more girls to attend school. The authors cite evidence of effectiveness and give examples, particularly from projects involving the World Bank. Especially in poor countries, projects succeed best when they include a "package approach" to address the multiple and powerful constraints to female education. The paper calls for increased monitoring and testing the cost-effectiveness of the kind of innovative packages now being tried in developing countries.


The author discusses the role of science in history and in different parts of the world, especially the developing world. Based on his own experience, he proposes a number of initiatives which may help developing countries benefit from the immense development opportunities, that in our times are offered by science. Based on this survey, he deplores the minimal attention given to science by some international organizations, including the World Bank.


This paper presents a framework for costing tests. It outlines the processes and procedures involved in
constructing, administering, scoring, and reporting high-quality tests. It identifies testing stages, activities, and necessary resources. Since the framework is built around the actual process of test development and administration, it provides a tool for costing tests that is compatible with the methods used by testing specialists. At the same time, the framework provides a guide for the less experienced on the processes that should be used to construct high-quality tests.


This paper asserts that changing world markets and new technologies are driving industrial restructuring. The ability of developing countries and new transition economies to compete in the global marketplace will depend on their ability to transform industrial relations policies involving trade unions and collective bargaining so that policies promote flexibility in the workplace and encourage the formation and effective use of human resources. The authors argue that there are key moments of transition in industrial relations systems after which modifications are difficult and that recent pressures for structural change in the developing world present opportunities for major transitions in industrial relations. Drawing on experiences in Japan and Germany as well as in developing countries, the authors conclude that worker participation in decision making is critical for bringing about popular acceptance of the changes resulting from industrial restructuring. They also stress the importance of coordinating and integrating industrial relations policy with other social, legal, economic, and education policies.


This paper reviews the current use of performance indicators in higher educational institutions in industrialized and developing countries and examines the factors that influence the use of these indicators. The paper also assesses the usefulness of performance indicators to policy making in terms of measuring quality and efficiency and guiding resource allocation and reform direction. The author places particular emphasis on the limits to using indicators in inter-system and inter-country comparisons. Recommendations are stated pertaining to general policy, governments, institutions, and developing countries.


This paper reviews Ghana's past commitments to education and health and evaluates the country's economic growth potential in light of lessons learned from the experiences of newly industrializing countries (NICs) of East Africa on the relationship between investments in human capital and accelerated and sustainable economic growth. When compared with the NICs at the time those countries started on the path of rapid growth, Ghana lags behind most of them in investment in education and health. Ghana can not expect to achieve the rapid growth seen elsewhere without more investment in human capital and will have to give the highest priority to further investments in basic education and primary health care. Without the solid foundation of universal literacy and numeracy and an efficient primary health care system, more costly investments in higher education and tertiary care would likely be both wasteful and inequitable. The paper concludes with a statement that broader policies related to population growth and to the efficiency of the labor market are also important for successful human resource investments.

This paper discusses university-industry cooperation as a worldwide need, especially in developing countries, and uses the International Center for Chemical Studies (ICCS) in Ljubljana, Slovenia to illustrate the potential benefits of such collaboration. The ICCS has a small team engaged in university-industry programs and international cooperation in chemistry, biochemistry, and waste management. The industries involved mainly need information services in fields peripheral to their principal interests. As a result, computerized information acquisition and processing, such as searches of international data bases or patent documents, has been a focus for much ICCS activity. While benefitting industry, this collaboration has helped raise the quality of university research and education. This paper presents the history of the ICCS and describes its current structure and the basic tools and strategies employed. Successful university-industry collaboration is illustrated with four detailed case studies.


This paper evaluates World Bank lending for educational testing. Of the 450 projects reviewed, most supported educational testing only through a subcomponent of the project. Based on tabulations and analysis of the testing subcomponents, the authors draw five conclusions: (1) projects that focus on improving institutional quality before addressing either technical or dissemination issues are more likely to succeed than projects that first try to improve technical or dissemination quality; (2) projects that focus on improving technical quality are more successful when both planning and implementation issues are addressed; (3) in order to give test scores meaning, Bank testing subcomponents should pay more attention to standard setting; (4) more support for dissemination of test results is essential; and (5) test subcomponents that are designated as identifiable project components or subcomponents in Staff Appraisal Reports, with specific budget figures attached, are more likely to succeed than those without such level of detail.


This paper analyzes programs in OECD countries intended to retrain displaced workers, where retraining is defined as both enhancing job skills and remediating deficiencies in basic education. Having briefly characterized displaced workers in industrialized nations, the paper discusses the major differences in labor market policies and emphasis on adult training, the question of who needs retraining and how retraining should be done, and the cost-effectiveness of retraining. Lessons learned from the OECD nations include: (1) training programs should be independent of the education system; (2) links to employers must be developed; (3) the foregone earnings of trainees should be minimized; (4) external providers of education should be made accountable; (5) a permanent, institutionalized training system is preferable to short-term intervention; and (6) not all displaced workers require relatively expensive training. An agenda for future research is included.


Monitoring educational progress requires data on both student learning and determinants of achievement. It also requires measures of learning achievement that can provide information on trends over time. This paper reviews basic concepts related to measuring learning, educational inputs, and processes; compares assessments to monitor trends with measures of achievement for other purposes; and estimates costs for different purposes of testing.
Education and Employment


This book is the first to characterize effective schools for poor children, internationally. Eight case studies are provided of initiatives to improve schools for rural and disadvantaged children: the New School Program in Colombia; the Democratic School Model in Brazil; a plantation school in Sri Lanka; the local school improvement efforts in Thailand; the education program for rural development in Nepal; the school reform in Ghana; strategies for providing quality education in Burundi; and the Accelerated Schools in the USA. The studies found that the effective schools share several common features with respect to provision of necessary inputs, existence of facilitating conditions, and the will to change. The book is unique in its focus on developing countries and good schools for impoverished children, and drawing on the research of an international group of scholars from all regions of the world.


This paper examines the challenge of developing educational assessments. It defines and describes educational assessments and attempts to provide insight into building assessment and educational research capacity by exploring institutional and social conditions under which applied research in the sciences can flourish in developing countries. The study found that the successful conduct of research in other applied sciences has required institutions which are stable, have a highly-qualified staff, replicate themselves through training programs, enable their professional staff to communicate with peers internationally, and are situated in social environments characterized by freedom of thought, adequate resources, and commitment to research quality. In light of these supportive institutional and social environments, World Bank support for educational assessments is reviewed and suggestions on how donors can help strengthen educational policy research capacity are provided.


This paper examines differences in achievement and attitudes among national government, private, and local schools in the Philippines; the differences among these types of schools in social composition, available resources, classroom orderliness, academic emphasis, and school decision-making; and possible reasons for differences in achievement. A multi-level modelling package was used to analyze the data. The results show that students in local schools scored lower in achievement and had less positive attitudes than students in government schools, and that students in private schools outperformed students in government schools, largely due to the effects of student selection. The authors also found that (1) centrally planned decentralization does not necessarily produce local level control; (2) local schools actually have little local control over teaching or school management; (3) local schools were given an empty opportunity since there was nothing for "local control" to control; and (4) local schools had fewer resources than private schools. In contrast, private schools had more management control and resources, better educated teachers, and more motivated students.


This paper reviews world-wide experience with creating transitional jobs through public work relief, public service employment, and subsidized private employment. The authors argue that work relief is a critical component of any structural adjustment program, so long as the work relief projects are consistent with the capabilities of the targeted workforce. They found
Annotated Bibliography, 1992

that the effectiveness of public works depends on timeliness, financing, good management, choosing high-priority projects, and matching the skill needs of the project with the skills of the targeted workers. Public works and work relief tend to provide transitional jobs mainly for male manual workers; hence, women and displaced white-collar workers may be better served by public service employment or subsidized private employment. While public service employment is relatively easy to administer and quick to implement and disband, it is difficult to focus geographically, rarely leaves anything permanent behind, and expands the public payroll, at least temporarily. Subsidized private employment is easily targeted and is compatible with efforts at privatization, but its success rate depends on the private sector’s willingness to increase hiring.


The number of World Bank loans to the scientific and technology sector has increased markedly in recent years. Loans have been made in the areas of higher education, industry and technology, and energy and infrastructure, to both public and private sector recipients. This paper reviews the World Bank’s lending in these areas, paying particular attention to regional differences, prominent goals and objectives, common project components, and criteria for sector and project evaluation. The study conclusions address the need to increase the links between teaching, research and industry, the crucial role of access to information, the urgent necessity to raise incentives to both institutions and individuals involved in science and technology, and the importance of initiating a formal dialogue within the World Bank concerning science and technology matters and priorities.

Parker, Linda E. Industry-University Collaboration in Developed and Developing Countries. PHREE/92/64 (1992).

In recent years, there has been an increased recognition of the importance of the connection between scientific research and technological development. Developed countries have experimented with different ways of using scientific research and technological development to promote economic growth, such as establishing industry-university research collaborations, and the number and variety of linkage mechanisms in developed countries has grown rapidly. Developing countries are also increasingly involved in fostering collaborations. This paper examines a variety of mechanisms currently in use in both developed and developing countries, as well as factors that influence success, lessons learned from both groups of countries, and ways to gauge a country’s readiness for collaboration. The author concludes that industry-university collaboration cannot be successful in the absence of other important elements. The concept of industry-university collaboration assumes adoption of at least some of the values and norms associated with Western universities. The existence of such collaboration is valuable, the author notes, as a symbol of the importance of doing work that relates to economic needs.


After reviewing the literature on repetition (students repeating grades in school) in developing countries, Patrinos and Psacharopoulos examined factors related to repetition in Bolivia and Guatemala. They developed a model to estimate the incidence and determinants of repetition. They used multivariate logistic regression analysis to estimate the determinants of repetition, using the results in simulations to determine probabilities of who are more likely to repeat. Their empirical analysis shows that certain populations are more likely to repeat a grade: children from less wealthy households and children of indigenous origins. This suggests that any targeting activities could be directed to the poor and could have an indigenous component, such as bilingual education.

This publication presents tables and graphs expanding and updating the data presented in the authors' 1986 article reporting the educational composition of the labor force around the world (*The Educational Composition of the Labor Force: An International Comparison,* *International Labor Review,* 125 (5): 561-574). The update documents the very long time it takes to register a significant improvement upon a country's human capital stock, as measured by the mean level of educational attainment of the labor force.


*Escuela Nueva* is a rural school in which one or two teachers offer all five years of primary education in one or two multigrade classrooms. Created in 1976 as an official improvement on the unitary school (an earlier multigrade approach), *Escuela Nueva* by 1989 enrolled 800,000 students in 17,948 schools. Special materials encourage practical applications to rural life; many activities involve parents in support of their children's learning; and teachers and supervisors receive extra training. The authors evaluated a 1987 sample of over 3,000 third and fifth graders from 168 *Escuela Nueva* and 60 traditional schools (which followed a national curriculum and did not use special materials). They found that *Escuela Nueva* had significantly improved student outcomes and student and community participation, as well as reducing dropout rates. Preliminary findings suggest that unit cost was only 5 to 10 percent higher than in traditional schools; extra costs of materials and training are offset by having only one or two teachers for five grades.


The authors use a multi-level modeling procedure to examine two policy options for improving the competence of teachers already in the system: providing inservice training and encouraging regular classroom supervision. In a nationwide sample of small, rural primary schools in Thailand, they found that a teacher's experience in inservice training courses predicts neither instructional quality nor student achievement. By contrast, intensity of supervision within a school significantly predicts both instructional quality and student achievement, after controlling for key school, teacher, and classroom variables. Intensive field work in selected rural schools suggests that supervision by effective principals is a critical component in a larger strategy to create an "ethos of improvement" in school teaching and learning.


The problems facing the higher education systems in developing countries include inefficiencies such as high repetition and dropout rates, growing gaps between what is being taught in schools and demanded by the labor market, and the need to provide education for diverse student groups. This paper analyzes the potential of the academic credit system (the American model) as an approach that may improve the quality and cost-effectiveness of instruction in developing countries. It evaluates the strengths and weaknesses of the credit system, identifies the necessary preconditions for its successful transfer to developing countries, presents three case studies, and examines what lessons can be drawn from the American and international experiences with the credit system. Discussion of implementation of the credit system is limited by the scarcity of research materials on the subject in developing countries.

The author argues that education in Egypt must increase Egyptians' ability to respond quickly and efficiently to changing technological and market opportunities. Since the mid-1980s, the Government of Egypt has pursued a fundamentally sound strategy: (1) stabilizing the number of university students, which grew rapidly in the 1970s and 1980s as a result of Nasser regime policies, including guaranteeing jobs to university graduates; and (2) raising the quality of instruction, which seriously deteriorated over the same period. The large classes, allowing little more than memorization and repetition, do not foster problem solving or other thinking skills. The Government is seeking to expand the role of two- and four-year technical colleges, increase the use of pedagogical materials in university instruction, and promote innovative interdisciplinary programs that stress problem solving and applied work. Though the job guarantee has been effectively suspended since the early 1980s, students have responded slowly since university graduation is prestigious and improves the chances of marrying well.


This paper examines the challenge faced by higher education systems in developing countries in terms of their capacity to meet the economy's needs for scientific training and research. It also explores various reform and innovation strategies and examines their financial implications. It proposes four generic principals to guide the design of reform strategies that would ease the tension between rising enrollments and stagnating resources without compromising the quality of teaching and research: excellence, responsiveness, efficiency, and equality. To achieve these objectives, countries need to design higher education reform strategies appropriate to their specific economic and social circumstances. The paper also concludes that focusing exclusively on the financial aspects is generally not sufficient. Financial measures appear most successful when integrated into system-wide institutional diversification strategies whereby countries accommodate the growing social demand through low-cost alternatives (short cycle programs, open university) while strengthening prestige institutions for graduate studies and advanced research.


This paper is a general operational review of Bank-supported lending for managed economic restructuring programs and its impact on the education sector. These programs are designed to increase output, employment, and living standards by removing rigidities and improving the economy's response to market signals. However, even successful programs have employment, output, and distributional effects, and there has been much discussion of the effects of Bank-supported adjustment programs on provision of educational and other social services, and of appropriate steps that could be taken. The paper examines a selection of lending instruments and evaluates their treatment of specific macro-sector links and individual education sector issues and objectives, and briefly reviews recent work on the relationship between macroeconomic reform and the education sector. Among the findings that should be included in sector adjustment programs is the need for integrated macroeconomic, budgetary, and sector analysis in program design. The characteristics of educationally-effective adjustment programs are described. Remaining weaknesses include the slow pace of civil service reform, weak labor market linkages, and the limited success of intrasectoral resource reallocation efforts.

The public sector has a more important structural role to play in developing countries than in industrial ones, particularly in how it affects labor markets. This paper reviews the issues and the empirical literature on the relationship between public sector employment, pay, and performance; and the competitive labor market. The first section summarizes the issues surrounding government's role as employer and producer, the second discusses the mechanisms by which a large sector with administered wages and objectives other than profit could affect labor markets. The third section reviews empirical studies that have attempted to measure the effects of the public sector on the economies and labor markets of developing countries. The evidence shows that public sector pay, employment, and performance are hurting the labor markets' ability to allocate workers among sectors and skill requirements. While policy reforms have led to some movement of employment out of the public sector, significant rigidities remain. The paper concludes with implications for public sector employment policies and suggested directions for future research.

**Thulstrup, Erik W. Improving the Quality of Research in Developing Country Universities.** PHREE/92/52 (1992).

This paper examines the role of scientific and technological research in developing countries. It emphasizes the importance of research training, both for the efficient adaption and use of modern technology and for proper environmental management. A number of common misconceptions about the purpose and nature of university research are discussed and the importance of research output monitoring and the provision of individual incentives for active research are noted. The role of scientific publications in the improvement of the quality and international status of scientific research in the Third World is recognized. The effects of different research policy strategies are illustrated by discussion of two university research projects in Indonesia.


This volume contains three papers that explore some of the aspects of an approach to educational planning that is better suited to the demands of educational development in the 1990s. Traditionally, educational planning has emphasized the expansion of education systems through discrete investments managed by central authorities. Such planning worked well as long as infrastructure development was the dominant priority, but has not worked as well for programs with more qualitative and policy-oriented objectives. The common theme of the papers in this volume is the need to transform education planning into a tool of strategic management. The first paper describes the features of a planning approach that has the flexibility to help education managers to deal with a diversity of aspects.
education demands. The second discusses ways aid strategies can be designed to support basic education development priorities. The third emphasizes the need for strengthening the information base for non-formal education and for building capacities for research and evaluation in order to provide policy-makers with an increasingly solid foundation for decisions.


This article argues that educational planning, dominated by economists' positivist paradigms, has rarely been an effective instrument of education management. The failure to take into account the diversity of local conditions, the complexity of the technical systems, and the neglect of implementation issues are cited as the principal reasons for the persistent planning mishaps of the past. The recommitment of the international community to education, in the wake of the recent World Conference on Education for All, makes it imperative to ensure that the new resources that can be expected to become available for educational development are well used. This means planning for change at the school level in the context of more organic management systems. The author argues that in this environment the premises of deterministic planning no longer hold. Operationally usable "interactive" models will be essential. The dimensions of such models are beginning to be clear: (1) systematic learning; (2) indirect intervention strategies; (3) institutional analysis; and (4) staff development.

**Ware, Sylvia A.** *The Education of Secondary Science Teachers in Developing Countries.* PHREE/92/68 (1992).

This report reviews the status of preservice and inservice secondary science teacher preparation in developing countries. It examines the actual balance of course content for both lower and upper secondary school teachers, as well as the type of program that would be most useful to future science teachers. Four case studies of preservice and three of inservice education are presented. The author offers recommendations for upgrading the educational background of the teacher trainers, revising the syllabus for teacher training, and introducing teaching "sandwich" courses.


This paper analyses the economic benefits of education. Using calculated rates of return, the paper presents estimates of both private benefits and social returns to education and discusses the shortcomings of this approach. The author then presents macroeconomic data that indicate an external effect of education on growth and a connection between education and both reduced fertility rates and improved health. A simulation model linking fertility decisions with consumption/saving decisions is derived. In this model, parents derive utility from their children's welfare; as a consequence, children are a form of savings. The model is extended to reflect education as an endogenous decision and looks at the impact of an external effect of education on economic growth. The
author concludes that education leads to both a fertility externality and to a growth externality. While more research is needed to determine the structure of the growth externality and the presence of any increasing returns to education, the presence of both externalities is sufficiently well documented for these to be taken into account in cost-benefit analyses.


This Annual Sector Review describes the Bank's FY 1991 education lending and sector work program. Its purpose is to take stock of salient features in the development of the education sector during FY 1991, to compare these developments with past trends, and to identify issues that may need to be addressed by sector staff and management. The dominant features of Bank lending for education include (a) a strong focus on quality improvement, with learning outcomes and skill acquisition as measures of progress; (b) increasingly close linkages between educational investments and broader social and economic policy; and (c) increased importance of new areas of lending, such as employment and science and technology.


This report tabulates and analyzes World Bank lending for education and training in 1992. It discusses the increasing diversity in the nature and scope of education lending; tabulates lending by project type, level, and geographic distribution; analyzes the quality of Bank education sector work and its supervision; tabulates policy research, dissemination, and staff development; and describes projects that have addressed educational quality, education and poverty, and environmental education. Major conclusions are that (1) the lending portfolio has become much more diverse in scope and purpose; (2) it strongly emphasizes quality improvement; (3) the diversity of the portfolio places increased demands on policy research and dissemination and skills training. The changing nature of the Bank's lending program calls for continuing efforts to improve sector work, assess the impact of the falling share of IDA lending for education, and build a knowledge base of "best practices" in emerging fields of quality improvement, poverty alleviation, and environmental education.


This paper examines the development of higher education in Hong Kong within the context of its impending transfer to Chinese control. It examines Hong Kong's economic development trends since the 1950s, the role of the Hong Kong government, the higher education sector, science and engineering education at the tertiary level, and the relationship between research and industry. The author's findings include the following: (1) while Hong Kong's laissez-faire economic policies have fostered economic growth in the past, they mask a lack of government leadership in charting long-term development; (2) past restrictions on higher education expansion have led to a severe shortage of highly-trained locals; and (3) this shortage and an attendant weakness in technological capability are likely to be major constraints to future growth. The paper argues that the development of higher education is intimately linked to economic and political structures and that the role of government is critical to setting the direction of both economic and educational development. It is not clear whether a rapid expansion of the higher education sector can compensate for past neglect.


This study employed a reverse tracer technique to identify alternative training paths for selected occupa-
Annotated Bibliography, 1992

tions in Colombia. The results confirm earlier U.S. findings that workers pursue many different training paths to acquire the skills needed in a given occupation. The authors argue that strong public intervention that narrows the effective range of available training will lead to less flexible and efficient training systems and should be discouraged. The "manpower require-
ments forecasting approach" to the planning of vocational education and training, which is currently popular in developing countries, will lead to reductions in training alternatives. The more training options are available to workers, the better they can arrange their own training packages.