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**THE DEVELOPMENT OF
NATION-WIDE LEARNING SYSTEMS**

**A Sector Approach for Assessment
of National Development from a
Human Resources Perspective**

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**for
Technical Assistance Bureau
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PART I

THE SECTOR APPROACH

In economic terminology, a sector is a rather clearly defined constituent segment of an economy. But as applied to developing countries the term is used quite loosely. Frequent reference is made to the "agricultural sector," the "modern sector," the "traditional sector," or more narrowly the "manufacturing sector," the "transportation sector," or the "commercial sector." Today, US-AID, the World Bank and many of the developing countries are talking about the "education sector," and indeed are stressing the need for a "sector-wide" approach to education, training, and other learning services. The objective is to supplant the project-by-project approach, and thus to provide a comprehensive view of all education and training activities and their interrelationships in order to identify the most strategic projects for possible external aid and assistance. The sector approach requires wider ranges of data and more sophisticated analysis, and it stresses the formulation of broad strategies of human resource development and utilization. Its objective in essence is comprehensive and rational planning of all education and training activities. The sector approach, moreover, goes far beyond the traditional boundaries of formal education; it encompasses training and human resource development in other sectors such as agriculture, industry, health, nutrition, and public service. Thus, unlike other sectors, education or the nation-wide learning system is not a relatively self-contained system. It has multiple intersections with almost every facet and element of national development.

The sector approach often includes four levels of activity. The first and simplest is the sector survey which is a descriptive profile of part or all of a country's system of education and training. The second might be called sector analysis. This usually involves a study of the dynamics of the sector's operations in producing outputs, the analysis of alternative policies for achievement of specified goals, and an evaluation of constraints and feasibility of various courses of action. The third, a sector strategy, which might or might not be based on a sector analysis, attempts to identify the courses of action required to meet chosen objectives or targets. And finally, a sector plan or program is a set of activities to be undertaken in a specified time period to implement a sector strategy. This paper is concerned with all four of these activity levels. Indeed,

they all must be considered together in any coherent program for human resource development. Throughout the paper, we shall use the term "assessment" as a shorthand symbol for all four in the aggregate.

For the most part, the sector assessment approach is being spearheaded by aid-giving organizations. Increasingly, sector-wide surveys, studies, reviews, analyses, and other kinds of sector-wide assessments are required prerequisites for external assistance, and they are thought to provide strong incentives for more systematic development planning by the recipient countries. These countries, for the most part, are willing to accept the sector assessment approach if they expect that the effort involved will lead ultimately to substantial external support.

Both US-AID and the World Bank use the term "education sector" to include educational and training services, both public and private, and both "formal," "non-formal," and "informal." In this paper we use the term nation-wide learning system. This encompasses all learning processes: in school, in nonformal education, in employment and in the working environment. It postulates that every participant in the active population or labor force is a potential learning station. It stresses the idea of universal opportunity for learning by both adults and children as a means of maximizing the effectiveness of all members of the labor force and of all elements of the population as human beings and citizens. The major components of the learning system are: (1) the skill and knowledge generating functions of working environments and employing institutions; (2) broadly based pre-employment formal education at all levels; and (3) out-of-school education and training services through a wide variety of programs, both public and private, aimed at developing more perceptive and knowledgeable people capable of entering and performing the widest possible range of occupations. The nation-wide learning system thus connotes the continuous or recurrent generation of the skills, knowledge, and capacities of man. In economic terms, it encompasses all processes of human capital formation.

The Perspectives of Analysis

In any sector assessment one must be aware of "what he is solving for." Assessments can be made from a variety of perspectives which stem from stated or implied goals. Thus, the starting point in a sector assessment in a developing country is the identification of national goals. Sometimes goals are explicitly stated, as, for example, in Tanzania's Arusha Declaration and related manifestos. More often, they are implied in speeches of national leaders and statements of political parties. In some cases, goals are postulated by outside advisors, such

as economists or educationists, who may be asked to assist in formulation of development plans. In rare instances, as in the recent Education Sector Review in Ethiopia, a "working party" of experts is charged with the task of drawing up a statement of consensus on national goals and aspirations. In any case the goals determine the perspectives for analysis, and the perspectives govern the scope of the assessment, the orientation of studies, the choice of relevant facts and data, and the priority problems for which solutions are sought. In evaluating any sector assessment, therefore, it is imperative to detect the perspectives; unfortunately, this may be difficult since they are seldom clearly stated or consistently utilized.

Another important consideration is "breadth of vision." From any perspective, it is possible to look at education or learning systems broadly or narrowly. For example, most education sector reviews have been confined to formal education, and some are even limited to specific levels such as primary, secondary or higher. More recently, the scope has been extended to include some nonformal education and training.

The most commonly employed perspectives for sector assessments are the following:

The first, and perhaps most widely used, is the social demand approach. In this perspective, the important consideration is how much education is demanded or thought to be desirable. A basic premise is that education, and particularly primary education, is a universal human right. Secondary education should be available for all primary school completers who are qualified, and higher education should be available to as many secondary finishers as possible. The basic idea is to provide maximum educational opportunity for all who want it, limited only by financial and human resource constraints of a particular society. This perspective is prevalent among most ministries of education as well as teachers and other members of the educational establishment. It also has had strong support from international agencies such as UNESCO. Quantitative expansion of all levels of education is taken as a cardinal objective, usually with the criterion of "more of the same" although improvement in quality is often stressed as an important objective as well.

A second basic approach is that of needs for national development. Here the emphasis is on producing the skills and knowledge which are relevant to the economic, political, and social goals of the nation. In short, the needs of the country have priority over the demands or wishes of individuals in the society.

The needs for national development perspective, however, can be narrowly or broadly specified.

The so-called manpower needs approach, for example, is narrowly focused. Characteristically, it views the education or learning system as a producer of skills and knowledge primarily for the modern sectors of developing countries. Most manpower requirements surveys are limited to needs for high-level professional and administration personnel and middle-level technicians and functionaries employed for wages and salaries in the modern sector enclaves. The manpower requirements approach is also oriented to economic rather than broader political or social development. Because of its limited viewpoint, the manpower requirements approach is subject to mounting criticism. Some critics, such as economist Kenneth Boulding, find the whole manpower approach repulsive, disgusting, dangerous and "incompatible with the ideas of liberal democracy." Boulding sees it as appallingly crude, and argues that simply counting noses is quite unrealistic.¹ Others condemn it as ignoring the role of the masses of rural and urban workers. Nevertheless, the view that education and learning systems should be developed at least in part in response to manpower considerations is still widely accepted.

Another narrow perspective within the needs for national development approach is that of economic returns. From this perspective, investment in education is based on cost-benefit analysis which relates the monetary costs of education and foregone earnings to life-time earnings of persons with different levels or amounts of education. This approach has been attempted in a number of countries, but as yet has had very little impact on policy formulation. The reasons are many: inadequate data, particularly on life-time earnings streams; conceptual weaknesses such as the assumption that earnings of individuals in developing countries adequately reflect productivity or usefulness in the economy; recognition of shortcomings of income or GNP as the only or even the principal target of national development; and the conviction that the benefits of education must be measured by humanitarian as well as by economic criteria. However, the appeal of the cost-benefit approach to economists is strong since it provides a rationale for incorporating education and training programs into the apparatus of planning for economic growth

¹Quoted from Robert M. Morgan and Clifton B. Chadwick, Systems Analysis for Educational Change: The Republic of Korea, Tallahassee: Dept. of Educational Research, Florida State University, 1971, p. 29.

In relating learning services to national needs, consideration must be given to cultural, social, and political as well as economic development. Man lives by more than bread alone. Education is important for building consensus, articulating values, and making man more sensitive to his environment and his fellow human beings. Any attempt to build education and training solely on the basis of economic criteria is socially and politically unviable in today's developing countries. It may be time to "dethrone" GNP as the sole and all-encompassing target of national development. The major difficulties here, of course, are that non-economic goals are difficult to specify and for the most part impossible to quantify. As the range of vision in looking at needs of national development broadens, therefore, sector assessments become more qualitative and less precise or "rigorous" in analytical design.

Another basic approach is that of employment generation. Essentially this is a national needs approach using a specific problem perspective. Here the basic assumption is that unemployment and other manifestations of underutilization of human resources are the most critical problems facing present-day developing countries. The expansion of opportunities for more productive employment for all segments of the population is, therefore, taken as the principal goal. The rationale is that the maximum utilization and appropriate development of the capabilities of the entire labor force will lead not only to higher levels of income but, even more important, to more equitable distribution of the fruits of progress. Economic prosperity is thus the consequence of effective human resource utilization and development. This approach has been articulated in recent country studies undertaken by the ILO.² A manpower requirements approach, of course, is implicit in the employment generation perspective, but it stresses the assessment of working opportunities for the masses in the traditional and intermediate sectors as well as high-level manpower development in the modern sector enclaves. The employment generation perspective is now attracting great interest because of the mounting economic and political problems of underutilization of human resources and growing disparities between the rich and the poor in most developing countries, even those with very high rates of economic growth. Suffice it to say, the employment generation approach looks at all education, training, and learning activities in terms of their relevance to creation of and preparation of employment opportunities.

²See for example, the Studies of Colombia, Ceylon, and Kenya which are reviewed in Appendix I, and also Frederick H. Harbison, Human Resources as the Wealth of Nations, New York: Oxford University Press, 1973.

In practice, most sector assessments are made from various combinations of the above perspectives. In many instances, however, the perspectives and the goals from which they stem are implied rather than openly specified. And sometimes, the goals are contradictory. A good sector assessment should state its goals clearly and analyze problems consistently from the chosen perspectives. Since the chosen goals and perspectives will vary from country to country, it is not feasible to construct a single model or blueprint for a sector assessment applicable to all kinds of economies. Obviously, different choices of perspectives will call for quite different strategies of analysis. Nevertheless, there are some considerations which are common in all of the approaches outlined above and these may be mentioned briefly:

1. The criterion of access to education or learning opportunity is central to all approaches. Which persons or groups gain access to primary, secondary, or higher education, and on what basis do they acquire such access?
2. Another consideration is the orientation of educational or learning programs. Is the purpose of education mainly to prepare persons for higher levels of formal education? Is the curriculum primarily geared to tests or examinations? Is the teaching and subject matter of schools relevant to the lives of those attending them? Most sector assessments stress some kind of educational reform, which usually involve broadening of access, improvement of quality, and changing of emphasis in schooling.
3. Another essential consideration is the nature of constraints, both human and financial. How much can a country spend, as a proportion of GNP or government revenues, on education and learning services? How can the financial burden be properly allocated? Does the country have the capacity to train the required teachers? And how can other restraints be relaxed, such as, for example, bureaucratic rigidity or traditional stagnation?
4. Finally, nearly all sector assessments are concerned at some point with internal efficiency. Here the central consideration is increasing the outputs of education and training programs while stemming the rise in unit costs. Education as an industry is inherently inefficient. It is a labor-intensive activity, and is subject to an iron law of rising costs. As it modernizes, its per unit expenditures tend to rise sharply. Thus, from whatever perspective one looks at education and training, "getting more for the buck" is a crucially important consideration.

In any sector-wide approach it is useful to examine the various attempts that already have been made in the developing countries. A review of experience is fully as important as formulation of new frameworks for analysis. In Appendix I we examine a number of sector reviews and attempts to implement a sector-wide approach in building education systems.

In Part II we identify and describe ten major "bridgeheads" or areas of strategic consideration in development of nation-wide learning systems.

PART II

THE BRIDGEHEADS FOR ASSESSMENTS OF NATION-WIDE LEARNING SYSTEMS

Methodologies of the sector approach may be based on various combinations of accumulated experience, new analytical apparatus, intuitive judgment, and availability of relevant information. In Appendix I, we review sketchily some of the more significant attempts made so far. The accomplishments and failures of these attempts suggest some of the guidelines for further efforts.

Other available materials are also quite valuable. The Guidelines for Sector Reviews and Pre-Investment Study Programs, prepared by C. Van Dijk and M. Hultin for the Education Projects Division of the World Bank (IBRD), includes a precise conceptual statement of education sector reviews, suggested procedural steps, and detailed check-lists of important areas for investigation. It is the most advanced framework for analysis which we have come across. From the much narrower perspective of formal education, the Latin American Bureau of US-AID has prepared a useful document entitled: The Sector Approach: Interim Guidelines for the Preparation of a Sector Analysis, a Sector Strategy, and a Sector Loan. This paper is based largely upon experience of AID in Brazil during the late 1960's. Its scope is limited to primary and secondary education. Undoubtedly, other blueprints are in process of preparation and will serve to specify in more concrete terms the "nuts and bolts" of the sector approach.

In this section of the paper, we hope to add to the methodology of the sector approach by analyzing a number of "bridgeheads" or strategic points of departure for the design of a comprehensive strategy for development of nation-wide learning systems. In nearly every developing country, good statistics and adequate data are meager. But lack of a proper informational base is no reason for deferring comprehensive sector assessments. Indeed, such assessments are essential prerequisites for the identification of the kinds of quantitative data which will be most useful for the proper development of a nation-wide learning system.

1. Sponsorship of the Assessment

Who is to undertake the assessment and for what purpose? This is the first question to consider. Most sector reviews probably have been initiated by the World Bank as a basis for systematic project identification. The Bank has in most cases asked UNESCO to organize a survey team, but on occasions it has also commissioned other public or private organizations (such as, for example, the

Overseas Liaison Committee of the American Council on Education) to undertake the assignment. In the case of Ethiopia, however, the Bank commissioned the Government through its Ministry of Education to make its own review, calling upon such outside expertise as was deemed necessary.

US-AID in some cases has relied upon its own country staff for sectoral reviews (as in the case of Colombia) or commissioned a private organization in the United States (as in the case of Korea with Florida State University and earlier in Nigeria with Education and World Affairs, Inc.). Significantly, in all cases the prospect of future external assistance is implied when seeking the interest and participation of persons or institutions in the host country.

The advocates of the sector approach argue that appropriate planning based upon such reviews will enable the country to make better use of its own limited resources as well as to increase its power for attracting external aid. This usually makes sense to local statesmen.

Most experts agree that there should be "maximum possible participation" by the host country in making any kind of sector review. Here there is a wide range of possibilities. An external sponsoring agency may employ local nations to carry out the necessary studies. It may consult with and secure the advice of the appropriate ministries of client country in the design of the project. It may submit initial drafts for comment and suggestions. Or, as in the case of the recent exercise in Ethiopia, it may offer to finance a self-study on the part of the government itself. These considerations are more political than technical. Yet, the success of the project and the ultimate implementation of any strategy which may be evolved are crucially dependent upon the receptivity, understanding, involvement, and support of prime movers in the host country.

2. Identification of Goals and Specifications of Perspectives

Once the question of sponsorship is settled, the articulation of goals and perspectives is the next bridge to cross. Here is where many attempts fall into deep water. It is easy, of course, for external agencies or experts to postulate goals. Some economists may say that the goal of the learning system should be to promote economic growth, using as a perspective some combination of the manpower approach and cost-benefit analysis. Lately, US-AID has stressed efficiency through better management, appropriate technologies, and cost-reducing measures. A frequently expressed goal is "improvement in quality ahead of expansion of numbers," usually implying some reform in orientation of the education system as

well as employment of better trained teachers. The ILO, as pointed out earlier, assumes that full employment is the cardinal goal, and looks at education and training as major instruments for achieving it.

Yet, what indeed are the goals of the country which is about to undergo a review? The local elites may have different interests from the masses. In some countries statesmen give priority to political over economic objectives. Without a clearly stated ideology, as for example in Tanzania, it is difficult to identify a consensus. In some cases, however, an appointed task force, as in Ethiopia's Education Sector Review may be charged with articulating goals and objectives. All countries, however, have more than a single goal in national development, and thus assessments of their learning systems usually will call for more than one analytical perspective. The statement of national goals and educational objectives in the Ethiopian Education Sector Review is a good example.³

3. Learning Opportunities Provided by Working Environments and Employing Institutions

If economic growth and expansion of employment opportunities are included among a country's national goals, then an analysis of the processes of human resource development in the world of work is the most realistic starting point for the study of a learning system. Indeed, one of the most serious shortcomings of existing education sector reviews is the failure to assess the skill and knowledge generating function of the principal employing institutions.

Man builds his skills and knowledge routinely and often unconsciously through learning-by-doing, being instructed or inspired by others to perform specific tasks, through association with peers and fellow workers, or simply by participation in a working environment or in the affairs of a community. Learning is responsive to practical needs. Most working environments, as a rule, develop the skills and knowledge they require. In a primitive subsistence rural economy, simple skills are handed down from father to son. Training is a process of observation and practice. Here, subsistence farmers may be well trained for subsistence farming, but not for much else. In modern sector agriculture, farmers and workers are given specific instruction and supervision (training) in use of fertilizers, insecticides, water use, planting, harvesting, or handling of crops.

³Draft Report, Education Sector Review, June 18, 1972, pp. 1-4, Part III. See also pp. 49-53 in Appendix I of this paper.

In this case, learning is more likely to be based upon the knowledge of farm managers, extension agents, or extensive research and experimentation. In a modern metal fabrication plant or textile mill, specific on-the-job training is provided for operators, and nearly all of the craftsmen and technicians acquire their skills through in-service training. The automobile mechanics in Nigeria and other African countries learn their trade in small garages or in the larger service shops of the car manufacturers. Only an insignificant few ever learn to become auto mechanics in formal vocational schools. In many of the developing countries the training of personnel to operate complicated oil refineries, chemical plants, or steel mills has been remarkably rapid and effective. Engineers with a professional education learn their specific tasks quickly; operators, who may have the equivalent of secondary school general education, are trained on the job. And managers and top administrators are in effect "grown through experience and service" in employment. In sum, the working environment, with its farms, factories, ministries, mines, garages, and repair shops, is a vast generator of skills and knowledge which may be of equal if not greater significance than the entire system of formal schooling.

A review of the learning generating capacity of working environments should encompass the following:

1. Access to working environments

Who is employed by the principal employing institutions, in both the modern, intermediate, and traditional sectors? What are the major "ports of entry" into employment?

What pre-employment education or skills do they possess? What are the essential prerequisites?

What types of persons with what skills, and at what wages do employing institutions prefer to hire?

2. Orientation of learning

What do people learn in the process of working?

What kinds of formal training are provided by various employing institutions?

What are the objectives of employing institutions in training workers?

3. Constraints

What kinds of skills cannot be developed practically "on-the-job"?

What are the human and financial constraints which account for less than optimal training in employment?

What incentives could be used to increase and improve training in the working environment?

4. Efficiency

In what respects are activities of employing institutions hampered or prevented by inability to develop skilled manpower?

What categories of personnel must be sent abroad for training? How effective are these arrangements?

What are trade-offs in terms of wages in hiring highly trained persons vs. hiring lesser trained persons and developing their skills on-the-job?

A systematic evaluation of the learning generation capacity of working environments is a much superior analytical tool than the usual high-level manpower survey. Manpower demand is expressed more realistically in terms of trainable rather than fully trained workers. The arbitrary and misleading assumption that the formal education system can produce trained persons like so many bars of soap is rejected. The concept of continuous learning throughout one's working life is re-inforced. And attention is directed to understanding the processes of learning and their interrelationships.

Finally, we are convinced that many countries are led to overinvest in formal education and particularly in pre-employment and vocational and technical training, because they underestimate the learning generating capacity of working environments and employing institutions. For this reason, we submit that their analysis should be the starting point rather than an ancillary consideration in an overall assessment of nation-wide learning services.

4. The Role of Formal Education in Learning Systems

As indicated in Appendix I, most education sector assessments start and end with a study and analysis of age-specific formal education. Since the literature is full of check lists for looking at formal education systems, very little need be added here.

Most countries view formal education from the perspective of social demand as well as economic growth. The Ethiopian Sector Review is a good case in point. From one perspective it states, "Education has the prime responsibility of contributing to the earning capacity of the individual and the economic betterment of the country." From the social demand perspective, a "fundamental purpose . . . should be to equip each citizen with the minimum education necessary for him to function and contribute positively and intelligently in his community and the wider society of the nation." In the Ethiopian exercise, secondary and higher

education are geared to national needs and goals, while first-level is viewed from the perspective of social objectives. In both, equality of opportunity, particularly for rural dwellers, is a major goal.⁴

The typical formal education review estimates enrollments, outputs and drop-outs in all three levels; enrollment ratios by major areas or regions (rural vs urban, etc); numbers of teachers and their qualifications; pupil-teacher ratios; and unit costs for various levels and kinds of schooling. Most place great emphasis on teacher training institutions and their strengths and weaknesses. Nearly all discuss in considerable detail, but not necessarily with quantitative specification, the unrealistic orientation of formal education in relationship to needs; many touch upon possible uses of new technologies; and nearly all are concerned with matters of the internal efficiency of the formal schooling system.

Here again, sector analysis should be concentrated in four main areas:

1. Access

At each level, who gains access to formal school, and more important, what groups are denied access and for what reasons? This is a vital consideration no matter what perspective is involved.

2. Orientation

What are the major aims of various levels and kinds of formal education? Are they to prepare persons for more formal education? Are they designed to prepare people for participation in the labor force? Does the curriculum involve rote learning or problem solving? These are all obvious questions that are found on the agenda of formal education surveys.

3. Constraints

What are the limits, financial and human, to expansion and improvement of formal education? How rapidly can access to education be extended to presently excluded groups? How can the financial burdens of education best be allocated? These are economic questions which demand in-depth consideration in a sector review.

4. Internal Efficiency

What are the wastage and drop-out rates and what are the reasons? To what extent can efficiency be increased through better organization, management, technology, and teacher utilization? What are some of the possible restraints on "the iron law" of rising costs of education?

All of the questions listed above are familiar to educational planners. A major concern is not what to look at but rather the pervasive lack of adequate data. Yet, in this area, data are better than in the case of nonformal education

⁴Ibid.

and learning generation in working environments, and as shown later fairly sophisticated quantitative analysis may be appropriate.

5. Nonformal Education and Training

It is now widely recognized that a simple review of a country's formal schooling system provides only a partial and quite inadequate analysis of its system of human resource development. For this reason, planners have become more cognizant of "nonformal education." But this is difficult to define. In the broadest sense, nonformal education and training encompasses the entire range of learning processes and experiences outside the regular graded school system. It thus includes everything from learning from parents, communication with others, learning from experience to formal training on-the-job, apprenticeship, adult education, and participation in organized out-of-school programs such as youth brigades, extension services, community development projects, and health and family-planning clinics. Probably no country has ever made a complete inventory of all nonformal learning programs conducted by its many public and private agencies; there are no reliable estimates of either capital or recurrent expenditures allocated to them. But in the aggregate, probably more people are exposed to nonformal learning activities than to formal schooling. And as a continuing process of development of skills, knowledge, and capacities of the labor force, nonformal learning and training is certainly of equal importance to formal education.

Strictly speaking, learning opportunities generated by employing institutions fall within the definition of nonformal education, but in order to emphasize their particular importance, we have treated this activity separately above. Suffice it to say, however, that many kinds of nonformal education may be an alternative or substitute for formal schooling; they may be a means of extending skills and knowledge gained in formal education; in some countries they may offer the only available learning opportunity for large proportions of the population; they can be a means of counterbalancing some of the distortions created by the formal education system; and finally, in part because of their heterogeneity and decentralized control, nonformal education activities often provide unique opportunities for innovations in the nation-wide learning system.

Logically, it would be desirable for every country to make a complete inventory of all nonformal education, to evaluate the usefulness of each separate activity, to plan extension and improvement of the most promising programs, and above all to build a strategy for their integration into a more logically

consistent and better functioning system. The formulation of such a strategy, however, is no easy task. The activities are many and diverse, and responsibility for their operation is highly decentralized. The best procedure is probably to concentrate on a relatively small number of "leverage points" or programs where concentrated effort might have the highest pay-offs. Some suggested leverage points are adult literacy programs, work-oriented literacy projects, farmer training centers, village polytechnics, mobile craft training programs, urban skill centers closely associated with employing institutions, nutrition and health centers, and family-planning clinics. These and other important programs may be operated by private groups or public agencies; they may be locally initiated or centrally sponsored. Many spring up in spontaneous response to needs and simply await discovery by master planners. Here again we suggest analysis under the four basic headings: access, orientation, constraints, and internal efficiency. And in examining these, perhaps the following questions deserve high-priority consideration:

1. In what important areas can nonformal programs fulfill education and training needs which formal schooling is unable to provide?
2. Are nonformal programs, because of their flexibility in comparison with the rigidities of formal education, more susceptible to innovation in the learning process?
3. In what ways do innovations in nonformal education and training induce desirable innovations in the formal schooling system?
4. In what areas do nonformal activities provide more effective learning, or learning at lower costs, than alternative programs in the formal education system?

The literature on nonformal education is still meager. But there are a few unpublished and to-be-published works which deserve mention. Sheffield and Diejomaoh made a series of case reports on nonformal education in Africa in 1971.⁵ The most comprehensive and analytical study: Nonformal Education for Rural Development was made for the World Bank in 1972 by Philip Coombs and his associates in the International Council for Educational Development (P.O. Box 217, Essex, Connecticut, 06426). It will probably be available from the World Bank late in 1973.

⁵James R. Sheffield and Victor P. Diejomaoh, Non-formal Education in African Development, New York: African-American Institute, 1972.

6. Critical Choices and Alternatives

The heart of any good assessment of a nation-wide learning system is the examination of alternative combinations of available or potential learning services. In this paper, we divided them into three broad categories: those generated by working environments and employing institutions; those provided by the system of formal schooling; and those offered by the more important organized nonformal education and training programs. All three perform strategic functions. But how can one determine the most appropriate mix of programs, the highest quality and lowest cost combinations, and thus the most effective strategy for overall development of the nation-wide learning system? To what extent in the sector approach must one rely on intuitive or qualitative judgment? In what areas is rigorous quantitative analysis feasible? These are questions to be considered in this and the following section.

The critical choices to be made within the formal education system are perhaps the most widely recognized. For example, in expanding access

to first-level education, is it better to provide a minimal program of four to five years for a larger number of children than perhaps six to eight years for a smaller number? Is it better to opt for large numbers of teachers with little formal education (perhaps eight or nine years) or to rely on higher paid teachers with longer pre-employment training? In allocating resources for education, what are the appropriate shares which should go to primary, secondary and higher? The Ethiopian review faces such questions squarely. It projects overall availability of resources based upon expected growth in GNP and government revenues; it then subtracts fixed amounts for secondary and higher education; and it allocates the remainder to first-level primary schooling and specified nonformal education programs. It opts for a four-year basic primary school with minimally trained teachers, and adult education programs to provide learning opportunities for those who never had access to formal schooling. In effect, from a social objectives perspective, it places the goal of providing universal learning opportunity before that of universal primary education for children.

Another series of alternatives faces the rural development planner. Given finite amounts of resources, what emphasis should be given to agricultural extension, farmer training classes, or multiple-purpose rural training centers which may provide programs in nutrition, health, home-making, rural crafts and functional literacy in addition to farming techniques? And within the vast array of other nonformal education activities, what are the best choices between radio and television programs, traditional literacy classes, and functionally oriented community development projects? In many countries it may be possible to estimate the costs of these various programs; studies their relative effectiveness are at least in the beginning stages. The most perplexing problem in all cases, however, is the difficulty of evaluating the outputs of these various programs. Here simple quantitative measure is meaningless, and qualitative differences must be distinguished largely by informed judgment.

There are also critical choices in improving the learning services of the employing institutions. Will taxes or subsidies induce large employers to offer better training opportunities? Are "training pools" such as the payroll-tax financed training provided by SENA or comparable Latin American institutions the most feasible method of extending services to small and medium sized enterprises? Will technical assistance to small proprietors

improve the operation of indigenous apprenticeship systems, or would they do just as well if left alone? Most education sector reviews have given little or no consideration to this range of questions.

The choice between the three broad categories of learning services, however, is more difficult yet often more fundamental than the choices within them. Here are some examples:

Skilled craftsmen such as electricians, carpenters, masons, fitters, and automobile mechanics may be trained in employment either through apprenticeship arrangements or by less formal means of gaining experience on the job. But they may also learn their trade in formal vocational schools. Take automobile mechanics as a case in point. In the developing countries most young people learn this trade as apprentices in small garages and shops. This indigenous training system might be improved by organizing extension services for the garage owners, or by off-duty training classes in the principal towns and cities. Another alternative might be to induce the major distributors of cars and trucks, which usually have the best facilities for producing mechanics, to train a surplus beyond their own needs. Pre-employment formal training in vocational schools is the other alternative, but probably in most cases the most expensive and least effective. A good sector review should weigh carefully the alternative processes of training such skilled craftsmen and suggest those combinations most likely to develop the quality of craftsmen needed in the shortest time and at the least expense. In many cases, the logical choice would be to rely heavily on employing institutions, to subsidize on-the-job training programs and to de-emphasize if not forego completely the formal vocational schools.

The training of senior technicians is another area for serious consideration. Technicians are persons whose skills are highly specialized to particular working environments. Most of their training must be in employment. Often a technician must be sent abroad for short periods to learn the technology of a particular industry, process, or complex of equipment. It is ridiculous to assume that a formal school or institute can produce a full-blown standardized technician for "industry" in the developing countries. In most cases, technical trainees in the polytechnic institutions must be sponsored by particular employers, and courses of instruction must be specialized to meet the requirements of the particular sponsoring organization. Here again a proper assessment would evaluate carefully the capacity of employers

to train technicians and the extent to which pre-employment education in formal schools is either required or relevant.

The training of nurses and medical technicians is another example where attention must be directed first to the role of employing institutions. For the most part, para-medical personnel are trained in hospitals or clinics rather than in a school classroom. Another related question is whether physicians must get their clinical training in expensive teaching hospitals associated with the universities or in rural hospitals and medical stations.

Finally, there is the crucial question of developing managers and administrators. Such persons certainly cannot be prefabricated in schools of business or university courses in public administration. They can get a good deal of relevant education before employment, but then leadership and managerial skills are developed in the crucible of practical experience. Staff training courses for those already employed are useful as stimulants to learning as well as refresher courses in relevant engineering and scientific fields. Here again we argue that skill and knowledge generation in the modern sectors of developing countries is not a matter of educating a predetermined number of persons to fill an estimated number of occupational slots, but rather a continuous process of human resource development centering upon the dynamic imperatives of employing institutions.

Many more examples of critical choices of alternatives could be presented. In any developing country, the range of such choices are wide, and the logical selection of the best alternatives is the key to effective human resource development planning. It is impossible to write an instructional manual for making such choices. Nevertheless, some broad procedural steps may be suggested.

First, the capacity as well as the limitations of working environments and employing institutions for developing human resources should be evaluated carefully. The focus should be on processes of learning, the nature of inputs (pre-employment education, training, and experience) at the more important ports of entry into employment, and the opportunities for improvement of learning processes within working environments. In many countries the large expatriate enterprises are even more vital than formal schooling in developing strategic skills, particularly for modern sector development. In any case, the working environment survey should be a prerequisite for assessment of the formal education system, and it will also eliminate the need for specialized high-and medium-level manpower surveys.

Second, to the extent that national development needs or employment generation are selected as perspectives for analysis, the formal education system should be evaluated in terms of its outputs of trainable people for entry into the labor market at the principal ports of access. A guiding principle should be that of comparative advantage. Specific training which can best be provided by employing institutions should be removed from formal education. The latter should concentrate on basic education, the building of cognitive skills, and pre-vocational education which cannot be provided efficiently by employing institutions.

Third, the possibilities of organized, nonformal programs should be explored as alternatives for or supplements to formal education. And here particular attention needs to be given to provision of some kind of learning opportunity to the vast majority of the adult population who may have been deprived of access to any kind of formal education.

The approach suggested above in no way downgrades the importance of formal education. On the contrary, by concentrating initially on the learning opportunities provided by working environments, it defines more sharply the essential functions and comparative advantage of formal schooling. The substitution of the concept of universal learning opportunity for the narrower goal of universal primary education for children offers greater hope for the masses to participate in national development. And it buries the notion that persons lacking formal schooling in childhood must be forever denied meaningful learning opportunities. Facts, figures, and judgment, however, are required for wise choices, and these are discussed in greater detail in the following section.

7. The Need for and Limitations of Quantitative Analysis

Many economists argue that sophisticated economic planning must be based upon rigorous quantitative analysis. The quantitative sector analysis approach is being applied quite successfully in agriculture and in industry where inputs and outputs are subject to quantitative specification and where the techniques of input-output analysis, linear programming and other econometric apparatus can be usefully employed. The hope is that similar techniques may be applicable in assessments of nation-wide learning systems.

The inputs of formal education as well as many nonformal training activities can be measured in quantitative terms. Unit costs of various levels of education can be specified, as can teacher salaries for various levels of training. Drop-outs are easily quantified; participation rates of various age groups in schooling are available in many countries. Capital expenditures and costs of materials can be estimated. Therefore, it is possible to construct models which clarify relationships between levels and types of education programs and various choices of inputs. A good example is An Asian Model of Educational Development, developed by UNESCO in 1965.⁶ It presents a methodology for quantifying various hypotheses commonly considered by formal education planners. It demonstrates the cost consequences of different combinations of measurable inputs. Modifications of this method have been employed usefully in a number of individual countries.

The inputs of nonformal education and the inputs of employing institutions in providing learning opportunities are more difficult to specify. For example, some employers incur measurable expenses in operating an organized training program, but most learning opportunities may be the consequence of normal operations where it is impossible to separate training from production costs. The costs of organized programs such as adult literacy and farmer training centers, of course, are quantifiable, though hard data are usually more difficult to find than in the case of formal education. But in all of these activities, the outputs again defy rigorous quantification at least on the basis of the kind of data which are likely to be available in the next decade or two.

Without question, therefore, much emphasis can and should be given to quantitative measurement of inputs and costs. This can provide a good basis for estimating the financial feasibility of alternative choices, and it may throw light on how much learning a country can buy at specified levels of GNP and public expenditure. Through rigorous quantitative analysis one may examine, for example, the feasibility of providing universal primary education within a specified time period, the cost-consequences of improving the quality of teachers in terms of their pre-employment formal education, the relevant choices in terms of allocation of resources for varying levels of expansion of secondary and higher education, and in many cases comparative outlays for major nonformal education programs in terms of numbers of persons served. Here again, the Ethiopian Education Sector Review is a good example

⁶ UNESCO, An Asian Model of Educational Development, Paris: 1966.

of systematic analysis of costs of different strategies of program development.

Perhaps the best basic treatment of quantitative analysis of education systems is the book by Russell Davis entitled Educational Models and Schemata.⁷ Davis' review of the applicability of quantitative analysis in education planning made for OECD in 1972 is also an excellent reference.⁸ Davis and other colleagues at the Harvard Center for Studies in Education and Development are currently engaged in further research on the frontiers of knowledge in this area.

Although quantitative methods can be applied quite successfully in analysis of inputs and costs of learning services, they are much less useful in measuring outputs. The outputs of learning services are difficult to standardize. For example, the number of primary, secondary, or third-level graduates may be determined, but the quality of their education, its relevance to working environments, and its general orientation to the needs of a country are difficult to express in quantitative terms. Nor can one determine whether the system is producing good or bad engineers, doctors, or scientists or turning out employable or unemployable secondary school leavers. Tests can be devised to measure cognitive skills, but they are of little use in measuring effectiveness of orientation of formal schooling to working environments. A skill produced in formal education, furthermore, is not stable. It may change, grow, or depreciate in the working environment. Outputs of educational systems are quite unlike other outputs such as bushels of corn bags of rice, head of cattle, or bottles of beer. Since outputs can be specified in only the most general and imprecise terms, production functions for formal education may be quite misleading. The quality and orientation of learning services are thus likely to remain for some time in the realm of intuitive judgment.

A final word should be added regarding the use of cost-benefit, or more accurately cost-earnings analytical systems. Basically, this approach calculates "returns on investment" in education by estimating the differentials

⁷ Russell C. Davis, Planning Human Resource Development: Educational Models and Schemata, Chicago: Rand McNally and Company, 1966.

⁸ Russell C. Davis, "Present Status and Future Developments of Models for Educational Planning," paper presented in September, 1971, to the Seminar on Methodology of Human Resources Planning, Development Center, Organization for Economic Co-operation and Development, Paris: 1972.

in life-term earnings of persons with different levels of education and relating these to costs of education to get the rate of return. In theory, the planner could be guided by rates of return in recommending the allocation of resources to various levels or types of education. Cost-benefit studies of this kind have been attempted in several developing countries. The best overall treatment is provided in Samuel Bowles, Planning Educational Systems for Economic Growth.⁹ Further examples of application in developing countries are described in the following:

Lucila Arrigazi, "Evaluating the Expansion of a Vocational Training Programme: A Chilean Experience," Paris: UNESCO, IIEP, March 20, 1969.

T. Paul Schultz, "Returns to Education in Bogota, Colombia," Santa Monica: The Rand Corporation, September, 1963.

Marcelo Selowsky, "The Effect of Unemployment as a Guide to Resource Allocation in Education: A Case Study on India," Paris: UNESCO, IIEP, June 20, 1969.

Hans Heinrich Thias, "Cost-Benefit Analysis in Education: A Case Study on Kenya," Washington, IBRD, November, 1969.

Maureen Woodhall, "The Use of Cost-Benefit Analysis to Compare the Rates of Return at Different Education Levels: A Case Study on Colombia," Paris: UNESCO, IIEP, March 7, 1969.

Robert M. Morgan and Clifton B. Chadwick, Systems Analysis for Educational Change: The Republic of Korea, Tallahassee: Department of Educational Research, Florida State University, pp. 26-40 and Appendix B, "Schooling and Earnings Differentials," by John Chang.

There are, however, many difficulties with this approach. The first is inadequate data. Although statistics on costs of education are relatively easy to collect, those for life-time earnings are not. They must be estimated from current or past census data. Differentials in earnings are also attributable to many factors other than level of pre-employment education. Another questionable assumption is that differences in earnings are a good indicator of differences in productivity or usefulness to society. In developing countries, earnings often reflect wage and salary structures based upon institutional factors such as tradition, class, or previous colonial heritage.

⁹ Samuel Bowles, Planning Educational Systems for Economic Growth, Cambridge: Harvard University Press, 1969.

The calculation of social returns, for example, should be based upon more than income. Obviously a scientist who works in a research organization which is applying scientific knowledge to development problems would be valued more highly than a university graduate who performs routine duties in a ministry, despite the fact that both may receive approximately the same salary. Or, although his salary may be substantially lower, the agricultural assistant who teaches hundreds of farmers the arts of seed selection and modern cultivation methods may be more valuable than the agronomist who shuffles papers in the ministry headquarters. And how would one evaluate the services of a physician whose practice is largely among high-salaried expatriates as compared with the public health doctor who directly or indirectly ministers to the masses? In most developing countries returns to individuals on investment in higher levels of education are quite high, whereas the social returns may be relatively low or even negative. This results in expansion of demand for education which may be very poorly geared to development needs.¹⁰

The rate of return approach, moreover, has a narrow economic perspective. It ignores the function of education as a selection device, as a means of building consensus, as a process of enrichment of human life, and as an instrument for developing strategic skills and knowledge. Income is certainly not a good proxy for any of these central functions of education. Economists may claim with some justification that the measurement of such intangibles is not their business; nevertheless, those charged with responsibility for broadly-based national development must weigh them carefully.

Finally, even within the narrow boundaries of responsibility of the economist, the rate of return approach tends to bypass the critical issues of income and opportunity distribution. In looking at this as well as his own model, Bowles reluctantly concludes:¹¹

10. For further elaboration of this point see Edgar O. Edwards and Michael P. Todaro, "Educational Demand and Supply in the Context of Growing Unemployment in Less Developed Nations," paper presented at Conference on Education and Development Reconsidered, Bellagio, May, 1972.

11. Samuel Bowles, *op. cit.*, pp. 207-208.

This shortcoming is important because we desire social justice as well as a large gross national product, and there is no reason to expect that the pattern of educational development which maximizes the rate of economic growth will at the same time generate an equitable distribution of income.

Despite its many shortcomings and pitfalls, however, cost-benefit analysis of economic returns to education can serve useful purposes. If as suggested above such analysis shows that individual rates of return are greater than social returns, then there is a logical argument for making individuals pay for more of the cost of their education. Thus, cost-benefit analysis may be useful in determining how the costs of learning services should be allocated. And even if the benefits cannot be measured realistically in non-economic terms, the analysis of costs per se is a vital part of any plan of human resource development.

In conclusion, rigorous quantitative analysis should be used to the maximum extent possible in the sector approach. In particular, it is appropriate for measuring inputs and costs. But informal judgment and non-quantitative appraisals are likewise required, especially in examining the outputs of learning services. Quantitative and qualitative analyses can be employed effectively in combination. Unfortunately, there is no elegant mathematical formula for allocating resources to learning service, but this in no way implies that the analysis needs to be superficial or impressionistic.

3. Organization for Implementation

As already indicated, sector assessments are beset by formidable methodological and data problems. But even these are eclipsed by difficulties of organizing the assessment effort, formulating a strategy, and implementing a program for development of learning services. It is obvious that the assessment must go beyond formal education itself, and this means that it must involve many government agencies in addition to the ministry of education. For example, the ministries of agriculture, labor, industry and commerce, community development, health, and others usually operate training programs in specialized fields. Private enterprises and public agencies as employers are strategically involved in human resource development. A sector-wide learning system approach, therefore, calls for inputs from a consortium of agencies. The planning organization, if one exists, may organize the task, but many surveys will have to be undertaken by the operating agencies themselves.

But ministries of education in some cases have opposed learning service assessments which transcend the boundaries of the formal schooling establishment. Agriculture ministries may be hesitant to share prerogatives with educationists or health officials. Private enterprise favors a minimum involvement of government bureaucracies. Thus, leadership and indeed pressure must come from the highest echelons in government - usually at the prime-ministerial or presidential level - to overcome resistance to the idea of a comprehensive and objective review. Even more important is leadership in implementing a strategy and program, for they are bound to call for diversion of resources and transfer of tasks from one ministry to another; they usually involve significant changes in lines of authority, particularly in local districts or provinces. In short, the building of a nation-wide learning system is a disturbing exercise; it generates insecurity and threatens vested interests. True, everyone may be in favor of the principle of building a comprehensive learning system, but in practice there are strong forces committed to maintaining the status quo.

The organization of the assessment effort is primarily a decision for the government. In the Ethiopian Sector Review, the government delegated major responsibility to the ministry of education. In undertaking project identification missions, the World Bank turns increasingly to planning organizations as initial contact points. But this is a delicate task. An assessment is bound to raise thorny political issues within the country. The pitfalls for an external organization wishing to "sell" a sector assessment are obvious, and in this area there are no mechanical devices, sophisticated methodologies, or even "rules of thumb" to guide them.

9. Review and Evaluation - "Recurrent Sector-wide Assessment."

In the past, both governments and aid-giving organizations tended to view manpower surveys and sector assessments as rather elaborate "one-shot" projects. It was thought that a good study would provide policy guidelines for years to come. This has proven to be a misleading notion because developing countries are undergoing dynamic change. An initial sector review and analysis can perform a number of functions. It can provide an overview of the nation-wide learning system; it can identify available policy choices; it can formulate a logical strategy; and it may outline an initial program of action. It should also specify areas of critically needed research and investigation. Yet, in reality the initial assessment should be considered

only as a sort of "down payment" for a continuous annual review and reappraisal of the operation and potential of a country's learning system.

10. Priorities and Organization for Research

The final bridgehead in considering sector assessments is research. The returns to research on various aspects of learning services are likely to be greater following an initial sector assessment than before it is undertaken. The assessment is useful in pinpointing the areas for needed data; it provides the benchmarks for determining the relevance of various kinds of investigations and it serves to activate and channel the energies of research organizations. Sector studies and analyses need not wait upon availability of data but rather should serve as instruments for determining research priorities.

Obviously, it is impossible to specify research priorities except as related to conditions in specific countries. However, some areas of high priority for most countries can be identified.

1. The means of evaluating and quantifying outputs of the learning system is unquestionably of highest priority as mentioned repeatedly throughout this paper.
2. Evaluation of processes of learning generation in working environments is definitely an under-researched area, and demands much greater effort.
3. Learning technologies and their application in developing countries are important, and considerable research in the area is already in process.
4. Both inputs, outputs, and objectives of nonformal education need more rigorous investigation, and here also major studies are in progress, sponsored both by the World Bank, US-AID, the African-American Institute, and other organizations.¹²
5. The institution of "tracer studies" probably warrants very high priority in all countries. Since there is some confusion about these and the state of their development, a brief description is presented in Appendix II.

¹² See, among others, International Council for Educational Development, various case studies on Nonformal Education for Rural Development, New York: 1972; Overseas Liaison Committee, Tanzania: A Nation-Wide Learning System, Washington, D.C.: 1971; James R. Sheffield and Victor P. Diejomaoh, Non-Formal Education in African Development, New York: African-American Institute, 1972.

6. Basic studies of investment in all kinds of learning services and their effect on income distribution would appear to be of critical importance. Some of the central questions are these: does formal education, particularly at the secondary and higher levels, benefit the poor, thus exerting an equalizing effect on income distribution? Or does it benefit predominantly the already privileged, thus favoring the rich and thereby widening income disparities? What kinds of learning services and what types of formal education widen income disparities? What programs benefit mostly the poor and the underprivileged? What measures are available to enable learning services to reduce income disparities while at the same time promoting greater productivity, better utilization of human resources, and economic growth?

Many other significant research priorities will become obvious as the outgrowth of sector reviews in various countries. Indeed, the need for studies will almost certainly outpace the capacity for undertaking them.

The organization and implementation of research activity is also important. Some investigations, obviously, are best undertaken by the staffs of the concerned ministries. Others may be more appropriate for detached outsiders, particularly in areas where intra-government biases are involved. Universities in the developing countries have great potential for research, and in many cases their resources are underutilized. Their involvement, and that of university students, may win high pay-offs in furthering understanding and interest in nation-wide development planning. And their strength as research institutions can often be augmented by collaborative arrangements with university research organizations in other nations.

PART III

CONCLUSIONS

In its most advanced form the sector approach to analysis of nation-wide learning services is a means of viewing all aspects of national development from the perspective of human resources. It rejects the notion that there is a self-contained, compartmentalized sector called formal schooling. Learning services and opportunities are vectors of every sector in the economy, and they play a critical role in every process of national development. Thus, in this paper, we have looked at development from a "human angle."¹³

The sector approach may be narrowly focused or broadly based. Narrowly focused approaches usually concentrate on formal education. The comprehensive approach includes, in addition to formal education, consideration of nonformal education and training programs as well as learning generation functions provided by the working environment and employing institutions. The argument in this paper favors the broader approach, and it stresses the importance of continuous or recurrent sector review and assessment.

The problems inherent in the sector approach are political, organizational, and methodological. There is no simple formula for analysis of education and learning systems in developing countries. The sector approach requires the collaboration of persons with practical experience in identifying critical problems and imaginative model builders with expertise in manipulating data. The practical experience expert, working by himself, is likely to come up with methodologies based on "more of the same." The econometric model builder, by himself, is likely to by-pass many of the critical decision-making bridgeheads as he specifies his assumptions. Progress is most likely to result from joint efforts of the two, the experience expert suggesting the high-priority problems for solution and the theoretician suggesting new approaches in analytical design.

Lack of data is always a problem and leads some experts to question the feasibility of attempting comprehensive reviews of nation-wide learning systems. It is futile, so they say, to undertake such projects until there are better

¹³ For further elaboration of this perspective, see Frederick H. Harbison, Human Resources as the Wealth of Nations, New York: Oxford University Press, 1973.

statistics. Our argument is that such assessments are prerequisites for building an effective data collection system. In the beginning, an overview of a country's learning system may have to be superficial, but it is likely to provide a better sense of direction than exhaustive analysis of a single part of that system, such as, for example, age-specific formal schooling. In exploring new terrain, one is blazing new trails rather than traveling on highways paved with hard data. The process of "recurrent assessment" stressed in this paper is an effective means for new discovery as well as for accumulation of relevant data.

Very few countries as yet have attempted comprehensive sector reviews, and those which have done so have concentrated quite narrowly on formal education. However, interest in the broader approach to nation-wide learning systems is growing, in part because of the recent emphasis of aid-giving organizations on nonformal education and in part because of growing recognition within developing countries that more comprehensive planning will increase their ability to secure foreign aid on terms which may be politically and economically most acceptable. The Ethiopian Education Sector Review in 1972 suggests that maximum enthusiasm for the sector approach is likely to result when the country itself is given the major responsibility for the design and operation of the review and when sizeable amounts of external assistance are both expected and needed as part of a package for development of the education or learning system.

As suggested in Appendix I, there is a reasonable amount of information, case experience, and general literature available for study by those who may want to initiate sector studies and analyses. Methodologies for quantification of inputs are available. The critical problems can be identified. Thus, it would be possible to offer seminars or short courses on the sector approach using discussion leaders from various countries which have had some experience. Furthermore, some research is now being directed toward quantification of outputs of various kinds of learning services. Finally, a joint working party of practical experience experts and model-building experts might be able to suggest more sophisticated methodologies for both quantitative and qualitative assessment of nation-wide learning services, or at least establish the guidelines for collection and analysis of the most critically relevant data.

In short, the sector approach to education and learning systems is new, but may be more widely used in the seventies. And this new interest can and will generate better methodologies and more sophisticated means of solving the practical problems which are inherent in the process.

APPENDIX I
COUNTRY EXPERIENCES

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This section reviews some case examples of the sector-wide approaches to education and training in developing countries. In most cases, the sector is narrowly defined, being limited to formal education or even to particular levels of the formal schooling system. The approaches are made from a variety of perspectives. The levels of assessment include sector surveys, sector analyses, sector strategies, and sector programs. Undoubtedly, there are many good examples of the sector approach which are not included in this review. Our selection is based largely upon availability of documents (i.e. from US-AID, the World Bank, and other sources). We know that many other assessments have been made or are in progress for which documentation is not yet available or is still confidential. The experience reviewed in this section, therefore, is illustrative rather than definitive.

A. Experience in Nigeria

1. The Ashby Commission Exercise (1959-60)

One of the earliest examples of the sector approach is the Ashby Commission Report on Higher Education in Nigeria, which was completed in 1960 just prior to the country's independence.¹⁴ This assessment concentrated on development of post-secondary education, but it also reviewed Nigeria's entire system of formal schooling.

The Ashby Commission Report was enthusiastically accepted by the federal and regional governments in Nigeria. It was the point of departure for most government policy papers on educational development from independence to the civil war in the late sixties. The Ashby experience is significant in the following respects:

First, the assessment was initiated and financed by the Carnegie Foundation. The Commission itself was composed of three Nigerians, three British, and three Americans. From the outset it had the enthusiastic backing of top

¹⁴ Investment in Education, the Report of the Committee on Post-School Certificate and Higher Education in Nigeria (Federal Ministry of Education, Lagos, 1960)

Also for subsequent appraisal, see Frederick H. Harbison, "From Ashby to Reconstruction: Manpower and Education in Nigeria", in Carl Eicher and Carl Liedholm, Growth and Development in the Nigerian Economy, Michigan State University Press, Ann Arbor, 1970

level officials in the regional and federal governments. Nigerians participated in the exercise from the outset.

Second, the assessment was launched at a time when the political appeal of education was extremely strong and the prestige of universities in particular was at its zenith.

Third, the original Ashby Report, the companion cost study (the Archer Report) and various "White Papers" of government together comprised a survey, analysis, strategy and program for development of the higher education sector. The targets for expansion of universities were ambitious. Yet, they were achieved or exceeded in a very short period of time.¹⁵

Fourth, although the Ashby Commission did look at education in Nigeria partly from the perspective of social demand, the main perspective was that of needs for national development expressed in terms of high-level manpower requirements. The Ashby exercise was perhaps the first attempt to use a manpower assessment as the basis for a strategy of development of higher education in African countries.

Fifth, the Ashby Commission exercise had negative as well as positive impacts on educational development in Nigeria. On the positive side, it focussed national attention on rational education planning; it highlighted the importance of higher education for national development, which unfortunately resulted in an expansion of university facilities much beyond its own recommendations and far in excess of the country's needs. It completely overlooked nonformal education and, for the most part, it dodged the issue of the capacity of the country to finance its overall educational development. As a later assessment demonstrated, the formal education system in Nigeria was unbalanced and poorly geared to development needs of the country, and the over-development of university education, although not recommended by the Ashby Commission, was nevertheless the consequence of a much too narrowly focussed appraisal of the learning system in Nigeria.

2. The EWA Survey of Human Resource Development and Utilization in Nigeria (1965-67)

In 1965 US-AID commissioned the Committee on Education and Human Resources of Education and World Affairs to make a broad survey of education and training

¹⁵ For fuller account see, F.H. Harbison, Ibid.

activity in Nigeria as a basis for planning future American aid. The report, published in 1967, provided a comprehensive review of both formal and non-formal education and outlined a broad strategy for human resource development.¹⁶ Unlike the Ashby Report, it included an analysis of education and training as related to the traditional and intermediate sectors as well as the modern sector, and it dealt extensively with problems of unemployment and underutilization of manpower. It also pin-pointed the imbalances in the Nigerian education system which resulted in part from the over-enthusiastic extension of the recommendations of the Ashby Report. However, the EWA Report had little or no impact on education development largely because of the outbreak of civil war before the exercise was completed. A new assessment made by UNESCO for the World Bank was completed in 1972 which is still confidential. There are, however, a few significant features of the EWA exercise which should be of interest to those currently making education sector reviews and analyses.

First, the EWA study was initiated by US-AID with very little advance consultation with Nigerian officials. Nevertheless, in part because the EWA survey team members were well-known and respected in Nigeria, both the regional and federal governments cooperated enthusiastically with the project. The approach used by the EWA team was "to seek the advice of Nigerians in making a report to US-AID". Nigerian officials, moreover, were keenly aware at the time of the need for a nation-wide review of the country's education and training system, and were themselves beginning to make a comprehensive self-study of their own under the aegis of the short-lived Ironsi regime. With the overthrow of the regime and the subsequent civil war, all efforts in nation-wide education planning were suspended.

Second, the perspectives of the EWA Report were needs for national development and employment generation. Indeed, the EWA Report was the first educational assessment in Africa to stress the problems of unemployment and underutilization of human resources.

Third, unlike most other surveys made in the sixties, the EWA Report made a comprehensive assessment of both formal and nonformal education, although it did not analyze in detail the learning generation potential of employing institutions.

¹⁶Education and World Affairs, Committee on Human Resource Development, Nigerian Human Resource Development and Utilization, New York: December, 1967.

Fourth, although the Report had virtually no impact on educational development in Nigeria for the reasons stated above, it does afford a fairly good model of a comprehensive survey of a nation-wide learning system. Its main shortcoming, however, is that it was neither initiated, sponsored, or carried out by Nigerians, nor was there any clearly implied assurance that it would lead to large-scale external aid from the United States.

B. Experience in Tanzania

1. Educational Objectives of the First (1964-69) and Second (1969-74) Five-Year Development Plans

Tanzania is perhaps the classic case of gearing an education system to needs for national development. The goals of educational development have been clearly stated; strategies have been formulated; and a sector-wide program has been implemented reasonably well. The education and training objectives of the first and second development plans may be summarized as follows:

- (a) To achieve self-sufficiency in middle and higher-level skills needed in the economy by 1980.
- (b) To give every child a primary education as soon as the financial circumstances of the government permit, presently planned for 1969.
- (c) To provide secondary and higher education only to the extent justified by the estimated manpower requirements of the economy for development; further, to support students by bursaries only in post-secondary courses which will produce the specific skills needed for national development.
- (d) To bring programs of nonformal education within reach of as many adults as possible on a continuing basis.¹⁷

In the words of President Nyerere, "to plan is to choose". Tanzania made some critical choices: first, to give priority to secondary and higher education, at the expense of rapid achievement of universal primary schooling, in order to meet the needs of national development. It also placed major responsibility upon employers for training of lesser-skilled workers on-the-job in the modern sector. Perhaps the most outstanding feature of the Tanzania approach has been to allocate each year secondary school graduates to university faculties and advanced training institutions on the basis of estimated high-level manpower priorities. Among the more significant features of the first

¹⁷Tanganyika, Five-Year Plan for Economic and Social Development, Dar es Salaam: Government Printing Office, 1964
United Republic of Tanzania, Second Five-Year Plan for Economic and Social Development, Dar es Salaam: Government Printing Office, 1969

and second development plans are the following:

First, a survey, analysis, strategy and program for the education and training sector was incorporated as an integral part of the first two national development plans. Such attention to problems of human resource development is very rare in national development plans.

Second, the education and training sector review was mostly concerned with manpower needs for modern sector development, although some attention was given to the government's philosophy of education as expressed in President Nyerere's proclamation on Education for Self-Reliance.¹⁸

Third, in the main although not completely, the strategy of educational development set forth in the two plans was reasonably well implemented. This, in itself, is a rare accomplishment.

Fourth, this sector approach was designed, initiated, and implemented by persons in the Tanzanian Government, mostly in the Ministry of Education and in DEVPLAN. External assistance and initiatives were minimal. Tanzania is thus a rather rare case of an internally generated sector approach to education and training.

2. The World Bank Project Identification Mission (1971)

In 1971 the Education Projects Department of the World Bank commissioned the Overseas Liaison Committee of the American Council on Education to make an overall assessment of formal and nonformal education in Tanzania and to identify priority projects for further financing by the Bank. In providing terms of reference to the contractor (OLC), the Bank insisted that the inquiry not be confined to formal education; it stressed the need to encompass a wide range of nonformal education and training activities; and it agreed that the scope of the exercise and the range of possible projects to be examined would go far beyond the jurisdictional boundaries of the Ministry of Education. OLC organized an international team of experts for the project. Its wide-ranging report, Tanzania: A Nation-Wide Learning System¹⁹ was issued for the Bank and the Tanzanian Government in November, 1971. Some of the significant features of the exercise are as follows:

¹⁸ United Republic of Tanzania, Second Five-Year Plan for Economic and Social Development, Ibid.

¹⁹ Overseas Liaison Committee, American Council on Education, Tanzania: A Nation-Wide Learning System, a report submitted to the Education Projects Department of IBRD and IDA and the Tanzanian Government, November 15, 1971. (Restricted)

First, the OLC assessment was the first to define the education and training sector as "the nation-wide learning system" and thus to specifically encompass formal education, nonformal training, and learning generation provided by employing institutions. It is an example of a very broad sectoral approach.

Second, major attention was focussed on the need for development and coordination of many kinds of rural learning services, from primary education (community schools) to district training services and functional literacy programs for the rural population.

Third, despite its comprehensive approach, the Report concentrated on projects which might be appropriate for financing by the Bank. In this respect, the OLC project was very narrowly focussed and indeed was looked upon by Tanzanian officials as a step in recurring funding for specific projects rather than as an overall sector review, strategy, or program.

Fourth, the perspective of the Report was that of national needs for development within the broad framework of goals for building a Socialist society as conceived by the country's top political leadership.

Fifth, although the OLC Report does suggest some novel guidelines for a comprehensive sector approach, the review itself was somewhat superficial (because of limited time of team members in the country). Furthermore, Tanzanian officials participated only minimally in the design, analysis, and operation of the project.

C. The Education Commission Review In India *

The Report of the Education Commission (1964-1966): Education and National Development was the product of a Government-appointed commission. It was to survey the entire field of educational development and to advise the Government on the national pattern of education and on the general principles and policies for the development of education at all stages and in all aspects. Although it was a nationally-appointed initiated project five of the fifteen Commission members and all of the twenty advisors were from other countries. The Government was of the opinion that "it would be advantageous to draw upon the experience and thinking of educationalists and scientists from other parts of the world in the common enterprise of seeking for the right type of education which is the quest of all mankind, specially at this time when the world is becoming closely knit together in so many ways."

The Commission set up twelve task forces: 1) School Education; 2) Higher Education; 3) Technical Education; 4) Agricultural Education; 5) Adult Education; 6) Science Education and Research; 7) Teacher Training and Teacher Status; 8) Student Welfare; 9) New Techniques and Methods; 10) Manpower; 11) Educational Administration; and 12) Educational Finance. There were also seven working groups: 1) Women's Education; 2) Education of Backward Classes; 3) School Buildings; 4) School-Community Relations; 5) Statistics; 6) Pre-primary Education; and 7) School Curriculum. The Commission spent 100 days traveling around the states, visiting universities, colleges, and schools, and holding discussions with teachers, educationalists, administrators, and students--including two conferences with university student representatives. Altogether it interviewed about 9000 persons and received over 2400 memoranda and notes. Thus, it is clear that the Commission's work represented a wide-spread mobilization of national and international expertise which reflected

*Carl Dahlman, Research Assistant in the Research Program in Economic Development, wrote this summary on the survey of India.

the knowledge and aspirations of a very broad segment of the people involved in all sectors of Indian education. (The report itself runs to some half million words.)

The main features of the report are as follows:

First, its elaboration included the four levels of activity of a proper sector approach: sector study, sector analysis, sector strategy, and sector plan.

Second, the "breadth of vision" was the whole educational system broadly rather than just an in-depth study of any particular stage. The Commission proposed a new educational structure to consist of:

1. one to three years of pre-school education;
2. a ten-year period of general education which is subdivided into a primary stage of seven to eight years and a lower secondary stage of three or two years of general education or one to three years of vocational education;
3. a higher secondary stage of two years of general education or one to three years of vocational education (diversification of studies and specialization starts at this stage);
4. a higher education stage of three years or more for the first degree followed by courses of varying durations for the second or research degrees.

Furthermore, it included plans for nonformal education and for close cooperation with the needs of the different working environments and employing institutions.

Third, the objectives that education is expected to accomplish are clearly stated. In the words of the Commission:

The most important and urgent reform needed in our education is to transform it, to endeavor to relate it to the life, needs and aspirations of the people and thereby make it a powerful instrument of social, economic and cultural transformation necessary for the realization of the national goals. For this purpose, education should be developed so as to increase productivity, achieve social and national integration, accelerate the process of modernization and cultivate social, moral and spiritual values.

To accomplish these objectives the major recommendations of the report are:

1. to bring about major improvements in the effectiveness of primary education;
2. to introduce work experience and social service as integral parts of general education;
3. to vocationalize secondary education: total enrollments in vocational education to be raised during the next twenty years to about 20 percent at lower secondary and 50 percent at higher secondary stage;
4. to improve quality of teachers at all levels and provide them in sufficient strength--to be accomplished by giving them better remuneration, in-service training, and better formal preparation;
5. to liquidate illiteracy;
6. to strengthen centers for advanced study and strive to attain international standards at some of the universities.
7. to lay special emphasis on the combination of teaching and research and strengthen science education at all stages;
8. to pay particular attention to education and research in agriculture and allied sciences--including orientation toward agriculture of the entire educational system and the development of agricultural polytechnics and universities coordinated with broadly-based agricultural extension programs;
9. to try to equalize educational opportunity by providing free primary education and liberal scholarship programs at higher levels which will provide access to good schools to all children on basis of merit with special emphasis on the development of weaker sections (women, backward classes, backward regions);

Fourth, the perspective for assessment is a broad need for national development approach combined with a social demand approach. The Commission points out that in view of the resource constraints it is impossible to meet the social demand for education at every level. Its strategy to close the gap is to provide universal, free, primary education (both to build consensus and to integrate the population as well as provide the minimum level of general education needed for development) and to use manpower analysis to determine the necessary amount of secondary and higher education. The excess social demand for secondary and higher education could then be reduced by a process of selective admissions.

Fifth, the report establishes priorities for the development of education and provides a detailed strategy for implementation grounded on the constraints of estimated financial resources and quantitative analysis of manpower needs.

Sixth, the review makes detailed recommendations (1) to improve educational administration and (2) to increase the efficiency of the whole educational system. To accomplish the first it proposes the strengthening and expansion of the central and centrally sponsored sectors (whose roles will be to set standards for, stimulate, and guide educational development) while at the same time granting state and local sectors more autonomy in implementing educational programs. To achieve the second it recommends increasing efficiencies of scale and making use of part-time education and correspondence courses.

Finally, it is noteworthy that the Commission views the whole effort of educational reconstruction as part of necessarily integrated plans which at the same time would try to reduce the birthrate by about half in 10-15 years and bring about rapid economic development so that there would be a job for every person who enters the work force.

All of these features emphasize the important strengths of the report. It is a very comprehensive and well thought out document which gained widespread acclaim both inside India and in the world. It does have one important weakness. Although it looks at the whole educational system broadly it does so from the point of view of formal education. This is especially true in the case of learning generating capacities of the working environments and employing institutions. While the report does place an emphasis on the need to orient vocational, technical, and engineering education toward production, to coordinate all three with work by including some work experience in training and using vacations to do productive work, and to provide some subsidies to industrial concerns which have training programs, it does not make any

real assessment of the learning generation capacities of employment. Therefore, it is not possible to see the trade-offs in terms of costs both to industry and to society of hiring highly trained versus less trained workers and developing the necessary skills on the job. As a result use of the alternative process of on-the-job learning for the most effective combination of formal, informal, and nonformal learning systems might not be understood. This foregone opportunity to make the best and most efficient use of resources and alternative learning systems can represent a real loss to a developing country where the most efficient use of limited financial and other resources is one of the highest priorities.

D. Education Sector Review in Korea

Two very useful education sector reviews have been made in Korea. The first, Education Sector Review in the Republic of Korea, (1972) is a well executed and comprehensive analysis of both training and education made by the staff of the World Bank for purposes of project identification. It is

broad in scope, covering nonformal and formal education, including medical education. However, this Report is at present confidential. Hopefully, it may be available for use by sector approach specialists in the near future.

The second entitled, Systems Analysis for Educational Change: The Republic of Korea, was published by the Department of Education Research, Florida State University, Tallahassee, Florida, in 1971. This assessment was made for US-AID by a Florida State University study team which apparently had the full cooperation and some participation in planning and execution by Korean officials. Its focus is formal education; almost no consideration is given to learning services outside the formal schooling system.

The perspectives of the Florida State Report are difficult to identify since no attempt is made to specify the goals of formal education. The authors of the Report tend to reject the manpower requirements approach in favor of the rate of return approach as a means of determining priorities for investment in education. In suggesting a strategy, the Report states that the highest priorities for change and development should be at the elementary-middle school level. The most novel feature of the Report is the recommendation that Korean elementary-middle schools be moved to a system of "individualized instruction", emphasizing a team approach to teaching, self-study techniques, and use of educational radio and television. The Report also stresses the need for a complete reform of vocational education, without, however, any analysis of the role of nonformal education or employing institutions in providing skill generation and other kinds of learning services.

The Florida State Report is indeed a useful document which provides a thorough analysis of the strengths and weaknesses of Korea's formal education system. Its major shortcoming as a sectoral approach is its failure to consider learning services and activities outside of the formal schooling system.

E. US-AID Assessments of Formal Education in Latin America

Most sector assessments have been confined to formal education systems under the jurisdiction of ministries of education. In this area, the Education Sector Loan assessments (ESL) made by the Latin American Bureau of US-AID are excellent examples. We have looked at several of these (for Brazil, Chile, Colombia, Dominican Republic, Panama, and Paraguay). All offer very good descriptions of the formal education systems (particularly at primary and secondary levels) and assessments of expenditures, enrollment ratios, teacher

education, major problems and deficiencies in orientation and administration, as well as summaries of national education development plans where they exist. Daniel C. Rogers, of the Economic Analysis Division of the Bureau for Program and Policy Coordination, US-AID, has made a very competent analysis of experience with the ESL approach, and so little further elaboration is needed here.²⁰ Nevertheless, the various country reports should be required reading for any person seriously interested in the sector approach. We offer these few brief comments.

1. The perspectives of the ESL analysis are mainly those of social demand for education, although passing reference is made to requirements for national development. The stated goals are increased efficiency of the formal schooling system, improvement in quality and orientation of primary and secondary education, and broadening of access to schooling. In all cases, AID and the host government examined the education sector (usually limited to primary and secondary levels and evolved a strategy for moving toward these specified goals.

2. For the most part, no analysis was made of the overall costs of implementing the strategy, nor were alternative approaches given much consideration. In short, however, consideration was given to reduction of unit costs through emphasis on experimentation as well as better organization and management within the ministries of education.

3. Without any question, the sector loan approach in these countries is far superior to the former project-by-project approach. It has encouraged, if not forced a basic review of formal education by both US-AID and the host governments. In most cases the Education Sector Loan assessments took into consideration what other donor agencies were planning in both capital aid and technical assistance. In all cases, they specified the efforts to be made by the host country in order to achieve their stated goals.

4. The problems facing these Latin American countries are quite similar: Very high drop-out and attrition rates in primary education, mostly because rural schools may offer only two or three grades; inadequate teacher preparation; absence of texts and teaching materials; academic vs. technical orienta-

²⁰ Daniel C. Rogers, "An Overview of Past Education Sector Loans and Some Points for the Future", US-AID, Bureau of Program and Policy Coordination, Washington, January, 1972, pp 15 plus appengixes. (mimeographed)

tion of secondary education; vocational training of low quality, poorly related to needs of employing institutions; absence of research and experimentation; and ineffective organization and administration throughout the system.

5. In most cases, the principal objectives of US-AID are three-fold. To correct the inequality in formal primary education between rural and urban areas; to promote comprehensive or multiple purpose education at the secondary level; and to assist, wherever possible, in encouraging research experimentation and better management within ministries of education.

6. The major weaknesses of the ESL approach so far are these:

- (a) The assessments are narrow in scope, concentrating for the most part only on primary and secondary schooling and traditional teacher training.
- (b) Very little consideration is given to the orientation of formal education to specific needs for national development. The assessments reflect the bias of persons (both in US-AID and the host governments) whose frame of reference is strictly that of age-specific formal education for children. The reforms suggested are in the line with orthodox thinking of educationists, and thus appeal to the more traditional elements in ministries of education.
- (c) Very little consideration is given to learning through nonformal education, and virtually none to programs conducted outside the jurisdiction of education ministries.
- (d) The learning generation capacity of employing institutions is almost completely overlooked. The manpower requirements approach for the most part, is also ignored, primarily because very few credible manpower surveys have been made.
- (e) No in-depth analyses have been made of the country's capacity to devote increasing proportions of its resources to education. In most cases, the basic assumption is that each country should devote more of its GNP or government revenues to formal education because of the social demand for it.
- (f) Nevertheless, despite the criticisms made above, the ESL approach is a major step forward. And there is no reason why it cannot be extended in the future to encompass more analytical assessments of nation-wide learning systems, alternative strategies, and more systematic cost and benefit analysis.

There follows a partial list of the US-AID assessments in Latin America. Most of these would be quite useful in any seminar or course dealing with the sector approach:

US-AID Mission to Colombia, Bogota, Education Sector Analysis
Paper (1972)

Department of State, Agency for International Development, Washington:
Education Sector Loan - Chile (1967)
Sector Loan Paper. Brazil - Education Sector Loan (1963)
Education Development Program - Paraguay (1970)
Sector Loan Paper. Panama - Education Sector (1970)
Capital Assistance Paper. Dominican Republic - Education.
Sector Loan (1971)

Department of State, Agency for International Development, Washington:
Sector Loan Paper. Nicaragua: Education Sector Loan (1972)

F. The ILO Studies - The Employment Objectives Approach

Mounting urban unemployment and widespread underutilization of human resources in rural areas have reached critical levels in most developing countries. As a result planners are becoming deeply concerned with employment generation and the lessening of economic inequalities and, in many cases, they have become disenchanted with maximization of GNP as the supreme target of development. The ILO as well as many development economists, furthermore, are now arguing that the goals of employment creation and income maximization are not in conflict. Indeed, higher GNP and more equitable distribution of income are widely thought to be the logical consequence of policies aimed at maximization of job opportunities. The writings by Professor Dudley Seers of Sussex University and the recent ILO country studies of Colombia, Ceylon and Kenya are good examples of work using this perspective, and a summary of the major arguments and implications is provided by F. Harbison in Human Resources as the Wealth of Nations.²¹

The ILO country studies, of course, cover much broader territory than assessment of education and learning services. But they do examine the education and training sector as an important element in building a full employment economy. And, although they under-emphasize working environments and nonformal education programs, their range of vision goes far beyond mere formal schooling. The leading designers and prime movers of the ILO studies are economists, sociologists and agricultural specialists rather than educationalists, and as such they are more concerned with what the outputs of a learning system should be than with internal operation of schooling systems, per se.

The Colombia study devotes only about 50 pages to education and training. It stresses among other things, the importance of education as a major source

²¹International Labour Office, Matching Employment Opportunities and Expectations: A Programme of Action for Ceylon (2 vols.), Geneva: 1971.

International Labour Office, Towards Full Employment: A Programme for Colombia, Geneva: 1970.

International Labour Office, Employment, Incomes and Equality: A Strategy for Increasing Productive Employment in Kenya, Geneva: 1972.

of employment in itself; it dwells upon the influence of education on fertility, population growth, and rural-urban migration; it emphasizes the impact of education and training as personal attitudes toward work and commitment to national development; and it places great store on expansion of access to learning opportunity as a strategic force in rural employment generation. At the same time, the Colombia study, like the US-AID sector loan assessments, stresses the need to increase the internal efficiency of formal education, to improve its quality and change its orientation, and to integrate educational planning more closely with planning for broad national development.

The main value of the Colombia study for those who have been deeply concerned with education planning is the new and fresh perspective it provides on goals of national development. The idea of "dethroning GNP" as the all-encompassing target of development is appealing to educationists. The goals of full employment and more equitable distribution of income are far more acceptable to non-economists than high-level manpower surveys and the beating of drums for even more emphasis on training of technical and scientific personnel. The full employment approach, moreover, concentrates on development of all sectors of the economy rather than merely the modern sector enclaves. In short, the humanist is much more sympathetic with a strategy for full employment than one geared to aggregate statistics and national income maximization.

Matching Employment Opportunities and Expectations, the ILO Ceylon study has much more to say about education as such. Indeed, it finds that the existing educational system is a major cause of imbalances in the economy as well as a roadblock to employment generation. The widespread unemployment among secondary-school leavers reflects the conflict between prevailing economic inertia and the rapid acceleration of output of formal schooling which is ill-adapted to the needs of the country. In numbers of pupils and teachers, output of school leavers, and magnitude of growth, Ceylon's educational system is impressive. But it is geared to qualification tests for more education rather than to national needs. It destroys the incentive to work of large numbers of young people. If anything, the Ceylonese have too much opportunity for education on the royal road to the university, but most have learned little of relevance to existing employment opportunities. The study proposes some rather basic structural reforms:

- (a) The "O" level school certificate (awarded at termination of secondary school) should be made a terminal certificate for most students instead of an entry pass to the university.

- (b) Government and private industry should require, in most cases, "O" level achievement rather than university degrees for higher level entry jobs.
- (c) After two or three years, everyone should be able to apply for entry into pre-university or university courses, in most cases returning to their original workplace after graduation.
- (d) At every point where selection takes place, greater emphasis should be given to aptitude tests rather than academic achievement tests.
- (e) Particular emphasis is placed on recurrent education as a means of eliminating the dichotomy between formal and non-formal education and integrating more closely the world of work with the schools and the university.
- (f) Priority should be given to expansion, diversification and enrichment of primary education where basic attitudes are formed and where opportunities exist for opening the rural communities to greater social integration and economic productivity.²²

The Ceylon study fails to examine in depth nonformal education and training programs, and like the Colombia study, largely by-passes consideration of the learning generation capacity of working environments for major employing institutions. It does, however, recommend a national service program for youth. And, implicit in the study is the recognition that learning involves more than formal schooling. To quote:

In this connection it is important to underline that our proposals would eventually lead to a situation in which education would no longer be seen as the monopoly of a single ministry or a single body of professionals (the teachers) or of both, but as a grouping of all the educational and training services of the country. The Ministry of Education would become a secretariat of the whole lot, public and private, taking a bird's-eye view of the various activities and ensuring the proper harmonization of the process of defining goals and the mobilization of available community inputs to serve the goals defined. This would be the logical institutional conclusion of proposals which would integrate formal education with activities at present foreign to the traditional view of education -- for example, agricultural extension, youth services, land and resettlement activities, public health activities, aid civil service and local administration.²³

²² International Labour Office, Matching Employment Opportunities and Expectations: A Programme of Action for Ceylon, op. cit., pp. 241-243.

²³ Ibid., pp. 146-147.

Like the previous two ILO studies, the Kenya study, Employment, Incomes and Equality, completed in the summer of 1972, assesses education from the employment generation perspective.* Its analysis of the employment problem points out that most of its causes are aspects of two kinds of imbalances: the first between the growth of the labor force (principally the educated urban population) and the overall growth of the economy; the second between peoples' aspirations and expectations of work and the structure of incomes and opportunities available. The solution, then, is not merely a matter of providing more jobs at the existing salaries. This would lead to an increase in the demand for them and also to increases in secondary school enrollments and in internal migration. Thus, the emphasis of the report is on attacking the problem at its source by righting the imbalances.

Within this framework the report points out that education and training interact and reinforce the imbalances in two ways. First, the education and training provided by the system is of the wrong kind in view of the needs of the economy. Second, the attitudes, aspirations, and expectations generated and stimulated by the education system (namely a preparation for and expectation of formal, non-rural employment) create a mismatch between job expectations and opportunities. The economy has failed to provide enough employment and will continue to do so because of nature of the first imbalance mentioned.

As a result, the strategy outlined in the report is to restructure both the economic and the educational systems: the economy so that it can provide more job opportunities for the ever-increasing population and education so that it provides the skills needed in the new economic structure.

- (a) Creation of one cycle of universal free education of 8-9 years duration, covering the present primary and lower secondary education.
- (b) Elimination of the present examination for the certificate of primary education (one of the main factors orienting toward continuing education eventually leading to a job in the formal sector) and its replacement by revised testing procedures at the end of lower secondary school. The new examination should focus on the type of skills needed by terminal students while still providing a basis for the selection of upper secondary education.

* This section was also written by Carl Dahlman

- (c) Gradual increase in the proportion of the curriculum of the basic cycle devoted to prevocational subjects. As a result emphasis would be on interests of terminal pupils, i.e., the great majority who leave school after finishing the first cycle.
- (d) Duration of upper secondary cycle to be two years. Entry to take place according to quota, size of which is to be determined by costs and national demands for skilled manpower. Content to be comprehensive with streams for general, commercial, technical, and agricultural subject emphasis.
- (e) Students completing the upper secondary cycle must undertake one year community service as integral part of educational career. University graduates must give a second year's service in their home areas. (Apart from easing supply constraint of teachers in implementing universal free education it is in line with the general philosophy of establishing close links between products of education and their environment.)
- (f) Single examination test system to be administered at end of upper secondary school to determine who continues to pre-university cycle. Entry into pre-university classes--of one to two years' duration--according to same criteria as in (d). No further examinations to enter university.
- (g) Restructuring of university as polyvalent institution to service needs of academic learning and technology on a full- and part-time basis, including the needs of second-chance institutions and adult education.
- (h) Creation of a series of second-chance institutions for drop-outs and adults. These institutions to be similar to village polytechnics and technical institutes. They would be based largely on Harambee and other local self-help efforts. As their name indicates, they would be specifically geared to recuperating early school leavers. Special quotas are to be established at upper secondary and university levels for such pupils. This would be a deliberate step to remove, or at least to minimize, the dichotomy between formal education and nonformal education. These institutions could also be used to phase into employment the school leaver from the basic cycle.

In order to work out the details of educational reform and to plan for its implementation the report proposes a commission composed of Kenyans from the ministries, the university, and other national bodies and institutions. An alternative, perhaps faster, proposal is to set up a working secretariat, located in the Ministry of Education but drawing staff from other bodies.

Unfortunately, like the two previous ILO reports, the Kenya study fails to examine in depth the learning generating capacity of the working environment, mainly because of the lack of data for any meaningful comparison.

however, implicit in the report is the recognition that education involves much more than formal schooling. In fact, it views the educational sector very much along the lines of the concept of the learning system developed in this paper.

To quote:

Education must be developed to support the basic activities of life. Thus the learning that takes place in the home, on the farm and at the workbench must be blended with, not set in opposition to, that which takes place in the school. In order to attain a broad, cohesive educational and training policy, the school as a purely educational institution should increase its flexibility to meet the needs of the family and the workplace. If this comment reflects the failure of the school to touch the real needs of rural life, it also reflects the failure of other agencies of communication, training and welfare, including health, community development and agricultural extension services.²⁴

Furthermore, the report emphasizes that educational reform must be accompanied by a reform in the economic structure. It points out that if the educational strategy outlined above is to be implemented wage and incentives which stimulate current educational choices and job aspirations must be restructured. This analysis of the context of education reform should prove helpful to many other developing countries with educational systems geared toward a small formal sector at the expense of the informal and rural sectors.

In some respects the ILO country studies cover the same ground, as the US-AID ESL assessments in Latin America with respect to internal efficiency, access, orientation, and experimental innovation in formal education. But there are important differences. The full employment perspective puts quite a different light on learning services than the social demand approach. The ILO studies are addressed to all ministries of government; the ESL assessments relate largely to activities within the jurisdiction of ministries of education. The ILO studies in effect are blueprints for broad national development, whereas the ESL and some of the other assessments discussed in this paper have a narrower sectoral focus. However, it is too early to pass judgment on the extent to which the strategies proposed have been accepted or implemented in most of the countries.

G. The Ethiopian Education Sector Review (1972)

Ethiopia's Education Sector Review made in 1972 is undoubtedly the most comprehensive and sophisticated example of the sector approach to education

²⁴ International Labour Office, Employment, Incomes and Equality: A Strategy for Increasing Productive Employment in Kenya, International Labour Office, Geneva, p.241.

and training yet made in any developing country.²⁵ It combines a sector study, sector analysis, and proposals for long-range alternative sector strategies. It will probably provide the foundation for a program of sector development in the years to come.

The Ethiopian Review is in large measure the result of "a spirit of constructive dissatisfaction" with the country's education system and much debate among educators, parents, government officials and students. Another initiating factor was the desire of the World Bank for a comprehensive assessment as a basis for identification of projects. In this case, however, the Bank did not commission a project identification mission of outsiders to make the assessment; instead it lent its moral and financial backing to a self-assessment by the Ethiopians themselves. The agency responsible for the Review in Ethiopia was the Ministry of Education and Fine Arts.

The Education Sector Review mobilized a large team of experts to undertake the assessment, organized into fourteen task forces and five small working groups to examine all aspects of education and training in Ethiopia. In all 61 persons participated actively in these groups; 51 were Ethiopians drawn from the Harle Selassie I University, the Ministry of Education, and other government agencies. The foreign members of the Task Forces were for the most part residents in Ethiopia on contract with various external assistance agencies. A few outside experts were also employed on a short-term basis. As sounding board mechanisms, there was a symposium in January, 1972 to review initial reports and study plans and a conference in July, 1972 to review the entire assessment. It is clear that the Education Sector Review effectively mobilized and utilized national expertise and reflected the aspiration and knowledge of the broadest possible segment of enlightened Ethiopians. As a result of the national debate to which the best minds and talents contributed, there appears to be wide consensus on the deficiencies of the present education system and on a range of sweeping reforms which are urgently needed. Only time will tell, of course, how well the recommendations can be implemented.

There are a number of features of the Ethiopian Education Sector Review which are particularly significant:

²⁵ Education Sector Review, Draft Report, June 13, 1972, Addis Ababa. Revised version should be available in the fall of 1972. The draft report was prepared for consideration by the Sector Review Conference held under the auspices of the Ministry of Education. It was not available for general distribution.

First, the Review is broad in scope, encompassing both formal and non-formal education. And an attempt is made to work out strategies for effective linkages between the two.

Second, the Review is no "pie-in-the-sky" expression of hopes or aspirations. It establishes priorities for development of education and training within realistic constraints of estimated financial resources.

Third, both national goals and educational objectives are clearly stated. The perspective of the sector approach is that of needs for national development defined in very broad terms. The Review postulates that secondary and higher education should be geared to high-level manpower needs. Below that level, education must have relevancy to the needs of the masses, taking into account that the vast majority of the Ethiopian people must earn their livelihood in agriculture and related activities. Priority is given to education and training which is most relevant for the rural population, and its objective is to develop in each recipient a critical understanding of problems instead of passive absorption of knowledge through rote learning. In short, the orientation of basic education is to prepare persons to participate in the work force rather than to direct them to more and higher levels of education.

Fourth, the Review proposes three alternative strategies for development of education and training over the next three decades. Total expenditures under all three alternative strategies are the same; also expenditures for higher education, mass media, subsidies to non-government schools, and non-recurrent (capital) expenditures are the same in all three cases. The difference in strategies lies in expenditures and programs for first-level education and for nonformal education.

Alternative I would provide for a continuation of the existing primary education system, with minor improvements to make the curriculum more relevant and to improve efficiency. As compared with Alternatives II and III, Alternative I would offer a first-level program of longer duration (six years) but to a smaller proportion of the school-age population. It would offer little on-going educational opportunity to primary school leavers not admitted to secondary schools, and a very limited program of nonformal education for adults. Under this Alternative, "universal mass education" (i.e., universal opportunity for learning in either formal or nonformal education) would be reached at a later date.

Under Alternative II, the formal schooling system would be restructured on a 4-4-4 basis, with sweeping revision of the curriculum to make education more practical and relevant. With a shortened and less costly program, the first-level schools (four-year duration) would accommodate a much larger proportion of the school-age population. Further learning opportunity would be available to first-level school leavers and adults through extensive expansion of nonformal programs of "community practicums" mostly in rural areas.

Alternative III would provide the fastest route to universal education or learning opportunity for all. Under this plan, school entry age would be raised to nine years, and grades 5 and 6 would be eliminated. A two-year "basic formation program" would serve 13-16 year olds not previously accommodated in primary. Secondary formation schools and an extensive variety of nonformal programs would accommodate both first-level school leavers and adults.

The Review projects enrollment levels and participation rates as well as distribution of funds for all three alternatives. The essential trade-offs are between universal primary education and universal access to learning opportunities for the masses, and these in turn involve trade-offs between investment in formal and nonformal programs. It appears that the Ethiopian Government will opt for some combination of Alternatives II and III. The Review recognizes, however, that because of the sweeping changes called for, these Alternatives will be much more difficult to implement than Alternative I.

Fifth, the Review makes extensive recommendations for improvement in the organization and management of the education and training system. Great emphasis is placed on decentralization of administration, as well as local initiatives particularly in planning and operation of nonformal programs such as skill centers, urban and rural "development centers", and public works programs as training devices. It also makes provision for organization of research and a special commission responsible for coordination of higher education.

Sixth, despite the very important strengths mentioned above, the Review has, in our opinion, some critical weakness. Perhaps the most glaring is that virtually no attempt is made to assess the learning generation capacities of employing institutions, either in the modern or traditional sectors. There is an implicit assumption that the education system is the primary producer of skills and knowledge, and thus little thought is given to improvements in working environments as a means of developing human resources.

Secondly, the estimation of manpower requirements for second and third level graduates is so aggregated as to be virtually useless as a planning tool. And very little attention has been given to education and training as related to the kinds of occupations in which most of the rural population is engaged. In short, the Review is deficient in analysis at all levels of the world of work in relation to education and training.

One may also fault the Review with failure to analyze critically the problems of coordination of education and training services at the local level and to specify in concrete terms the allocation of responsibility as between particular ministries. For the most part, the Review has been a project of the Ministry of Education and Fine Arts. But many of the non-formal education programs lie within the traditional jurisdiction of other ministries and some private organizations. The extent of involvement of these ministries and organizations in the Review was limited, and consequently there is some question about support of and enthusiasm for the program in powerful government quarters outside the Ministry of Education. The Review might be on firmer ground if it had been sponsored by the Planning Organization or a consortium of the ministries having responsibility for training programs. A related deficiency is the absence of significant participation of the major employing institutions. Again, however, only time will tell how effective the Ministry of Education can be in leadership of a program involving many different interests in both the public and private sectors.

The weaknesses suggested above, however, are relatively minor in comparison with the obvious strengths of the Review. As the exercise proceeds, many of the problems mentioned above may be resolved. Indeed, a major premise of the Review is that there should be recurrent assessments of both plans and progress in the development of education and training in Ethiopia. Hopefully, the Review is not a once-and-for-all assessment, but rather an initial bench mark for continuous study, analysis and strategy development over the next several decades.

We conclude with the recommendation that all developing countries have much to learn from the Ethiopian Education Sector Review as a striking example of effective organization for undertaking a sector analysis. And it may be even more important for them to follow closely the processes of moving from adoption of strategies to implementation of programs of development of education and training.

H. A Concluding Note

Our review of country experience with the sector approach to education and training has been selective rather than comprehensive. There are other examples of experience which, though not known to the author, are probably just as significant as those which have been mentioned in this paper. There are also excellent reports on some countries which are as yet confidential and cannot be cited. As time goes on, much more material is likely to become available.

APPENDIX II

TRACER STUDIES

The "tracer study" idea is suggested by the bullet which traces its path from the firing point to the target. It is nothing more nor less than a system for following the work experience of those who leave or complete programs of education or training, either formal or informal. Admittedly, such follow-up studies are difficult and expensive, but the returns, in terms of effective project evaluation and feedback to skill and knowledge generating institutions, are potentially very great.

The objective of most tracer studies has been to collect data on how secondary school or university graduates get jobs, how long they take to find work, their levels of compensation, relevance of previous education to work experience, and career pathways in general. They can provide information on the linkages between education and the world of work; they give in-depth data on unemployment or underemployment of educated manpower, and are useful in supplying hard facts for vocational counseling. An initial pilot tracer study in Kenya illustrates some of the questions which may be raised about projects of this kind.

In 1969, the Institute for Development Studies at the University of Nairobi conducted a pilot tracer study of fourth form secondary schools in Kenya. A small team of researchers at IDS worked in collaboration with the headmasters and careermasters in the selected schools. The basic tracing instrument was a simple card file for each leaver on which was recorded basic facts from school records about each student's family background and educational history. The post-school employment tracing process was first attempted by mail questionnaires. Students not located in this way were traced by a variety of procedures, including questioning of friends still in school, parents, and others who could supply information about their whereabouts, and eventually project personnel were assigned to search out the missing leavers in person. Within a very short time, the research team was able to trace 93 percent of the leavers from the sample schools. Once traced, the leavers were asked to supply information concerning their occupation, pay, method and time of finding employment, and other relevant questions. In some cases, employers were also asked for supplementary information.

Experience with the pilot study in Kenya indicates that:

1. Most school leavers can be traced to their places of employment, but follow-up personal interviews are necessary to supplement mail questionnaires.
2. Information about work experience and conditions of employment can be secured easily, but analysis of the data collected involved more time and expense than originally estimated.
3. School headmasters and careermasters are eager to make use of the information received on employment experience and career pathways.
4. Estimates of unemployed school leavers derived from the tracer studies were at variance with estimates derived from a Kenya manpower survey (the employment rate being much lower in the case of the tracer studies).
5. Schools, and probably also universities, will require inducements, either in the form of grants or extra personnel, to undertake tracer studies.

The tracer study device probably could be generalized and systematized in most countries. A first step would be a requirement that every major institution conducting education or training programs establish a simple but standardized system for tracing their outputs for a period of from two to five years. Placing the responsibility for tracing on the education or training institution would constitute in itself an important means of building better linkages between the learning system and the system of employment generation; it would make the institutions more sensitive to employment and possibly lead to more realistic orientation of the curricula to the world of work; and it would enable them to carry out more effective counseling and guidance services for their students.

The tracer study idea, of course, is not new. Many researchers have made follow-up studies of students in education and training programs; indeed, that would be required in any serious exercise of project evaluation. But most follow-up studies are too elaborate, complicated, and expensive to be undertaken by already overworked headmasters or directors of training programs. The primary considerations for a generalized tracer system would be simplicity of administration, ease of collecting information, and capability of analysis by relatively unskilled persons without use of complicated data processing systems. The design of such a program, however, would require a great deal of experimentation and systematic research.

There are other possible ways of establishing a generalized tracer system. For example, in Kenya a proposal is under consideration to combine the tracer idea with the annual labor force enumeration by employers. Under this scheme, each school or university leaver would be assigned a serial number coded to identify the school, courses of study, grades and years of attendance. The leaver would keep this serial number for his working life, and his employer would be required to record it on all returns made on the annual enumeration. With this procedure the pre-employment school record of each employee with secondary education and above could be traced easily. Reports on post-school employment could be made to headmasters, careermasters, or university officials for all leavers. As information of this kind is accumulated each year, there would be a complete individual record of changes in occupation, pay, promotion, and transfer. In other words, a complete tracing of career pathways. The information collected could also be used by research organizations for making cost-effectiveness studies, identifying major shifts in employment patterns, estimating manpower supply and demand, and developing materials for guidance purposes. This scheme, moreover, might eliminate the necessity of making periodic manpower surveys by substituting a procedure which in effect would be a continuous process of assessment of the market for middle- and high-level manpower in relationship to the educational system. There are, however, some drawbacks and knotty questions. The scheme is more appropriate for tracing the history of employment than experience with unemployment. The assignment of serial numbers and securing the compliance of employers in reporting serial numbers might pose some problems, and the reporting itself could infringe upon individual civil liberties. The analysis of the data might also create obstacles in newly developing countries, particularly if the system were extended beyond secondary and higher education to all primary schools and other learning institutions. Nevertheless, the possibilities for building more effective linkages between school and work are so great that they warrant serious consideration in most countries.

In conclusion, the most useful function of "tracer studies" is analysis of relationships between learning institutions and the world of work. If used widely, they could chart trends and provide warning signals indicating areas of imbalance between the learning and employment generation systems. They could supply much of the information required to determine the benefits of education and training programs. They have, of course, obvious limitations. In common

with most other analytical tools, they are more easily applied to manpower in the modern than in the intermediate and traditional sectors. They record past actions and, by themselves, provide no forward estimates. Finally, the costs could be high and the implementation cumbersome. Clearly, the design of a nation-wide tracer system is a formidable task that would require extensive experimentation.