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LINKING TRAINING AND EMPLOYMENT: AN EMERGING PERSPECTIVE

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This study is the cumulative report of the Training for Employment Project, conducted by the U.S. Department of Agriculture Graduate School for the Bureau for Science and Technology, U.S. Agency for International Development. Its insights and conclusions are derived, in part, from three field studies conducted earlier in Jordan, Honduras and Panama. The work of the study teams is appreciated.

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CHAPTER ONE: INTRODUCTION

The purpose of this document is to provide a tool for designing, managing, and assessing effective vocational and technical training projects in developing countries. This is not an academic research paper but a practitioner's manual. Its principal audience includes A.I.D. project officers and vocational and technical training planners from developing countries, many of whom may not have extensive academic backgrounds in training.

The manual is intended to provide easy and clear reference to the most salient features of vocational and technical training programs. It is not intended to single out any particular type of training as being better than other types. Instead, the manual demonstrates why various types of training are needed in developing countries, and it provides a means for determining which types are likely to succeed in given contexts.

The manual stresses the crucial factors that must be addressed in the design, funding, and management of training projects and describes the conditions that must be present to successfully link training and employment. The heart of the manual is an analytical matrix for weighing various training options in light of these factors and conditions. This tool gives planners a practical framework for developing projects and for understanding the philosophic and economic implications of choosing particular options for use in different contexts.

This paper synthesizes the findings and insights gained from five field studies conducted in Panama, Honduras, and Jordan. Three of these studies

focused on linkages between the supply and demand sides of technical training, and two were employer-based training surveys. The paper also draws from a broad base of knowledge in the literature about vocational training. A summary of one of the studies, Linking Training and Employment: A Case Study of Training Systems in Jordan (Herschbach et al., 1985), appears in the appendix.

The overall study was intended to provide an understanding of how designers of skills-development programs can make the programs more responsive to employment-related needs and thus more efficient at preparing individuals for jobs.

AN EVOLVING PERSPECTIVE

Developing countries are searching for better ways to develop their human and material resources. Serious questions about previous development policies have arisen because of stagnant economics, high rates of unemployment and underemployment, and the inability to extend even the most basic benefits to large numbers of ill-fed, ill-clad, ill-housed and illiterate citizens. Especially in the rapidly expanding urban areas, thousands face an alarmingly bleak future. One of the more disquieting features of development in Third World countries has been unprecedented urban population growth accompanied by marked deterioration in the quality of life.

The employment future of the young appears particularly bleak. Most developing countries have large youth populations: it is not uncommon for as much as 50 percent of a country's population to be below the age of 15.

Current unemployment rates may be as high as 20 to 25 percent or more: youth unemployment rates are twice as high; and there is very little present or long-term employment opportunity for many young people.

Unemployment is most apparent in urban areas, and problems of low income and underemployment are found both in rural and in urban areas. The immediate economic and political threats to orderly development are real. It is not surprising that some of the most volatile countries of the world are those facing the bleakest futures.

Education, including vocational training, has been an important aspect of development. Considerable investment has been made in education by developing countries, often with the assistance of donor agencies. Educational services have been significantly expanded during the past two decades, and educational budgets have grown both in absolute and relative terms.

Education will undoubtedly continue to play a key role in development for the foreseeable future. But there is little likelihood that educational budgets will continue to expand at previous rates, and they may even decline significantly. Program planners and managers obviously need to follow new, more cost-effective strategies.

Furthermore, past educational investments have generally not produced the results that were expected. The quality of instruction, including that of vocational training, has often been poor. Consequently, planners are beginning to examine alternative ways to deliver educational services. Vocational training has come under intense scrutiny.

Previous development projects were undertaken without a full appreciation of the complexities involved in establishing a vocational training system that is effectively linked with the employment market. To create linkage, planners must not only design functional instructional components, but they must structure the training system so that it can operate within a highly complex political, economic, and social environment. An emerging perspective recognizes the complexity of the development task and acknowledges the range of vocational training alternatives that must be explored in order to adequately address training and employment issues.

The Study

This study is based on the assumption that a major problem of vocational training in developing countries is a weak relationship between training and employers' needs for skilled human resources. The problem may be a matter of poor design or poor instruction; or the programs may be insular, divorced from the realities of the labor market. By shedding light on the connection between training and employment-related needs, this study contributes to the evolving perspective of the function and limits of vocational training.

Field Work

The study is based on the findings of three study teams, which spent four weeks in Jordan (Herschbach et al., 1985), Honduras (Kelley et al., 1985) and Panama (Kelley et al., 1985) during July and August 1984. The teams surveyed the potential need for training and assessed the relative responsiveness of the existing training systems in meeting employment-related skill requirements.

In addition, the teams examined the skills-training systems in each country to assess the potential for meeting the country's skill requirements. Program elements that tended to support strong employer/training linkages were identified along with inhibiting constraints.

Two additional studies completed in the spring of 1985 (Cuervo, 1985a and 1985b) examined in more detail the employer-based training in Honduras and Panama. More than 250 employers were samples in these two countries. The findings contributed to this study.

Literature Review

There is substantial literature on skills-training in developing countries. Much of this literature was consulted and, where applicable, incorporated into this study. Unfortunately, however, studies have tended to focus on the internal efficiency of the training program. Even when the relationship between training supply and demand is studied, it is generally examined from the perspective of addressing labor-market projections for trained manpower. Seldom is the actual linkage between the development of skills and the needs of employers examined in ways that illuminate the crucial elements in this linkage. Little has been written about these elements, particularly from the perspective of specific employer needs. This challenge was addressed by the present study.

Another source of information consisted mainly of discussions with training personnel within the three countries, experts in donor agencies, and U.S. A.I.D. personnel. The study team members also participated in discussions among themselves.

ORGANIZATION OF THE MANUAL

Chapter two examines three types of linkages between training and employment. The linking conditions include:

- o quantitative factors;
- o qualitative factors; and
- o working relationships.

The first major section discusses quantitative linkages and examines the extent to which training programs can adjust supply to perceived demand. This section also examines the kinds of information that are needed in order to relate supply and demand and discusses what alternatives are available when good labor market information is lacking. The section presents the thesis that although the ability to relate training output to labor market demand is generally regarded as an important condition to effective training-employment linkages, the condition may be more important for some training alternatives than for others which may require less precise information.

The second major section examines the conditions that affect the quality of training. These conditions include costs, staffing, program management, and training content. If training programs teach trainees the wrong skills or teach them poorly, the training does not relate well to the work place. One of the intractable problems facing vocational training in developing countries is that of poor program quality.

The third major section discusses another condition necessary for establishing strong linkages between training and employment: the routine, day-to-day working relationships between those who employ skilled workers and

those who train them. To the extent that close working relationships can be maintained, the quality of training is improved.

Chapter three provides an analytical matrix to use as a tool in weighing the ability of different training alternatives to address the three types of linking conditions. The chapter discusses several training alternatives which have different structural characteristics enabling them to address - with varying degrees of success - each of the conditions necessary for establishing work-related linkages. The particular structural characteristics of a training alternative make some conditions more important than others.

Chapter four summarizes the study's findings and makes recommendations for strengthening vocational training programs.

There are no simple answers to the development problems facing Third World countries. But many answers can certainly be found. A better understanding of the problems should lead to better planning decisions. This study attempts to provide a valid basis for making vocational training decisions and to contribute to the evolving perspective of the role of vocational training in development, by identifying some of the limits that planners face and the alternatives that are available for better program design. Questions about the preparation for work will assume greater importance in the coming decade, as developing countries grapple with the problems of expanding populations, human needs, work, and economic and social equity.

CHAPTER TWO: LINKAGES

An essential aspect of vocational training is the linkage between training and employment. Instructional programs that have strong training-employment connections are more effective than programs without such connections. This fact has become increasingly evident from the research on the practice of vocational education. A recent research study of vocational education conducted by the National Research Council for the U.S. Department of Education, for example, emphasized the importance of linkages (Sherman, 1983). The Council found that good programs are often characterized by their close ties with business and industry. Arguing that links between school and work should be strengthened, the Council recommended measures to encourage and expand collaborative programs, which it believed were needed in more settings.

But what are linkages? If a problem has good linkages, it has characteristics that make it responsive to needs for employment-related skills. To be responsive, at least three conditions must be met:

- o an adequate number of trainees must be supplied to meet the needs of a given labor market at a particular time;
- o trainees must receive satisfactory training and be able to perform at acceptable skill levels; and
- o there must be day-to-day working relationships between those who employ skilled workers and those who train them.

This chapter discusses these three types of linkages.

The Quantitative Factors

The purpose of vocational education is to prepare individuals for employ-

ment. Programs are established and maintained when there is a perceived need for trained manpower. Accordingly, as developing countries have embarked upon plans for economic development, training programs have been established to address existing and projected needs for skilled workers. And the work of manpower economists and planners during at least the past two decades has resulted in various schemes for assessing the demand for skilled workers and for transmitting this demand to the various training sources, including, of course, formal and nonformal training programs. Manpower economists in particular have adamantly clung to the assertion that planning for vocational training must be based on systematic analysis of the labor market's demand. In other words, the number of people to be trained is the initial concern of program planning.

Gauging the Demand for Training

There are at least two dimensions to estimating the demand for training:

- o assessing the number of job vacancies; and
- o identifying the specific skills required for individual jobs.

Adequate procedures have been developed for identifying skill requirements after the initial decision to provide training for a specific job. These are relatively straightforward and effective procedures. Considerably less success, however, has been achieved in estimating existing manpower supply and determining the need for additions and replacements to the labor force. It is not that information cannot be obtained. But, for a number of reasons, it is difficult to obtain useful information that can be applied to program planning.

Reliability of Data

Reliable statistical data are simply unavailable in many developing countries. And when data are available, they are often in forms that cannot be used. The classification system used for collecting data, for example, may not be useful for training purposes. There may be gaps that render data useless, or the data may be aggregated in a way that makes the information difficult to use (Pi'i, 1984; Daugherty, 1982).

Even when good data can be obtained, their reliability as bases for making training decisions is limited. At best, useful long-term projections can be made. That is, estimates for the future can be established by making projections based on past and current needs. General pictures of the growth of the need for manpower in certain job categories are obtained in this way, but these pictures should be considered only gross estimates subject to change. It is difficult to fine tune estimates of demand because labor markets are dynamic: The rates of employment within industries shift, often significantly; and total employment, participation, unemployment, and underemployment rates also shift.

Applicability of Data to Local Markets

Local concerns may be almost completely bypassed. For most countries there is no such thing as the labor market, but rather there are a number of geographically separate and discrete local labor markets. Many training programs have local focuses. For purposes of making training decisions, assessments need to be carried out in local firms and plants. Data collection

and analysis, however, generally take place at the national level in ministries of education or labor, and aggregated data dealing with the broad allocation of human resources are used. Such macro-planning may be highly inappropriate as a basis for local training decisions. As Method (1979) observes, a major problem associated with macro-planning is that assessments are conducted "at such a high level of aggregation (national, regional, sectoral) that alternatives for training or skill utilization at the level of the firm, project or local organization cannot be considered directly" (p. 13).

Other Barriers to Using Data

Even when good labor-market information is available, some training programs lack the flexibility to adapt quickly to changing labor market demands. Aside from the fact that planning data have significant shortcomings, there are real and practical barriers to using the data. For example, a training program represents a considerable capital investment that must be used over a reasonable length of time in order to amortize its cost. Instructional staff must be retrained, and curricula revised and developed. Moreover, donor agencies tend to view program development as one-time investments, so there may be few resources available to make program changes. Therefore, once a training program is established, there is usually little flexibility for making program changes in response to the changing and specific needs of employers. This is particularly true of formal vocational training programs that operate within entrenched bureaucracies with limited resources.

Training decisions, especially in the case of formal programs, tend to be

based on social, rather than economic, demand. As Bereday and Lauwerys (1967, p.85) suggest, "If the truth were told, nine-tenths of educational planning around the world is of this type, despite all the lip-service to the more sophisticated varieties of education as investment in economic growth." A decision is made to invest in a particular kind of training because social demand for it is perceived, or because certain political, social, or educational goals can be realized with such an investment. There may be, as Blaug (1979) observes, only a vague connection "with any objectives that might be described as economic" (p. 365).

Are Data Essential?

To be sure, information about demand is useful; but it is useful in a very restricted sense. What is theoretically desirable is not easy to attain. Planning and decision-making simply do not occur in the organized, systematic way envisioned by many manpower economists, who prefer to carefully monitor labor market changes and to match training output with employment openings. Even in planned economies in developed countries, the interface between the labor market and training is highly imperfect, and it is certainly more so in free-market economies. There is simply too much uncertainty in most projections, even if they could be translated into training decisions.

Nevertheless, imbalances between labor supply and demand mean a poor allocation of resources and increased training costs. Shortages of skilled workers can impose burdens on an economy; surpluses can create a growing pool of underemployed or unemployed workers. If it is difficult to use labor-market information in vocational planning, what are the alternatives?

Planning Without Perfect Data

For some kinds of training programs, there is no need for data on national, regional, or even local labor markets. In the case of on-the-job training, for example, vacancies are determined by the firm based such factors as labor turnover, production changes, and market expansion. Although labor market information is useful, firms can and do get along without it. Furthermore, the interval between when the need for labor arises and when the training occurs is often relatively short; the training program itself is usually short-term, a comparatively quick response to the demand for labor. The firm, then, can determine its training requirements and can structure appropriate programs with very little need for labor-market information about the economy in general.

Even some publicly administered training programs require little labor market information. The Vocational Training Corporation in Jordan, for example, operates an apprenticeship training program. The number of people trained depends on the number of placement openings in cooperating firms. In other words, there is a self-adjusting mechanism requiring little outside labor-market information. What information is needed comes directly from the employers (Hershbach, et. al., 1985). Cooperative work experience programs have similar characteristics. In general, the closer the training is linked to direct job placement, the less need there is for general labor-market information relating to job openings, skill requirements, and trends. The key condition is that the training incorporate actual work experience, thus assuring a direct relationship between training and job placement.

Formal Vocational Education Programs

Formal vocational education programs conducted in public secondary schools have come under considerable criticism, because there is little relationship between training supply and demand. This problem is recognized in most developing countries. Formal programs tend to be insular: They do not provide close working relationships between trainers and employers, and there is usually little effort to place students. Because of the lack of good information, about the labor markets, the relationship between the kinds of programs offered and the market demand is weak. Programs tend to be of poor quality, and they are usually not flexible enough to adjust to changing demands for labor, even if the demands could be identified.

The Role of Formal Training

If formal training programs are expected to provide training and placement on specific skills, this criticism is largely warranted. But such an expectation may be misplaced: Formal vocational training functions best when it provides a basic technical and theoretical foundation for more specific training that occurs before actual job placement. There are several reasons for this:

- o Formal vocational training offers standardized programs for relatively large numbers of students, most of whom are too young to have made definite career choices;
- o Instruction often includes general as well as technical education; and
- o Practical instruction, which tends to be based on laboratory activities rather than job experience, is often restricted by the shortage of supplies, machinery, and equipment.

The Content of Formal Programs

Formal vocational training is generally offered for a few traditional occupations, including clerical work, automotive repair, and building construction, among others, that have the potential to provide relatively stable employment for large numbers of individuals. In the course of training individuals for these occupations, trainers can impart generic skills that prepare the trainees to enter into a number of related jobs that require additional training. This additional training is often brief and occurs, ideally, just prior to employment. Considerable flexibility is thus achieved, which is an asset when uncertainty characterizes the needs of the labor market.

Organizing formal programs to provide more generic training, coupled with available short-term training at the work site, is not a new idea. It is one that has been advocated for at least two decades by program planners, but it is an idea given little attention in discussions about formal vocational programs and lack of linkage between supply and demand.

Responding to the Labor Market

There is probably less need for specific labor-market information than the substantial discussion in the training literature would suggest. Many, perhaps even most, training programs are conducted quite successfully without access to labor market information. It is simply not needed: The link between training and job placement is direct. For those programs that have such direct training-employment links, however, labor demand projections may be useful, even if they are only general trends in broad occupational areas.

Occupational Versus Job-Specific Training

The number of individuals to be trained and the type of training offered must bear some relationship to market demand, even though there is considerable uncertainty regarding the specific job placement of trainees. This applies to most formal training programs administered through ministries of education, as well as to programs with similar characteristics in proprietary schools. However, planning for training conceived of as occupational--that is, training in a representative sample of skills used in one occupational field or in closely related occupational fields--requires less specific data than does job-specific training.

General projections of labor-market trends are probably satisfactory for occupational training because the training content has the built-in flexibility to allow trainees to acquire more job-specific skills. But the initial training must be complemented with specific and focused training just prior to, or at the time of, employment. The fact that few formal programs provide for this, directly or indirectly, limits the potential effectiveness of training and makes the lack of specific labor-market information an issue of some import.

Finally, generic training does not escape the need to determine the number of persons that are trained; rather, it shifts the need for information to broader categories and reduces the need for a data system that has to be fine tuned. And although it is necessary to analyze which specific skills are required for occupations, this type of analysis identifies generic skills that are less susceptible to change and more open to application across a wide spectrum of job activity than are job-specific skills.

Summary

The quantitative factor is generally considered necessary for effectively linking training with employment. But for some training alternatives, this factor is less important. And some alternatives do not require precise information, which is fortunate because problems abound in collecting and using data for planning vocational training.

The Qualitative Factors

A number of factors affect the quality of training by determining the extent to which trainees develop the skills required by employers. Individuals may successfully complete training, but the training may be inappropriate because the skills taught are inappropriate or are taught so poorly that the quality of work suffers. Any discussion involving the linkage of training and employment must thoroughly address the conditions that are essential for making a program good.

One of the intractable problems facing vocational education in developing countries is the poor quality of training programs. The major emphasis in development has been on expanding educational opportunity, but rapid expansion of programs has taxed limited resources at a time when program quality remains poor. In response to strong social and political pressures, training program enrollments have been expanded. Generally, however, the quality of the programs has not been enhanced.

It is one thing to develop a training system. It is quite another to

achieve and maintain high standards. Donor assistance, in particular, is provided to initiate development programs, and investments are usually in buildings and equipment. Less attention is given to the factors that are necessary to ensure that individuals are well trained and sufficiently committed to the goals of the program to ensure its continued success. This failure to address a wide range of complex issues involved in the successful functioning of training programs and interventions may be the biggest short-coming of donor assistance.

Four factors directly related to instructional quality are financial resources, staffing, program management, and training content. These factors are reviewed below.

Training Costs

Training programs face at least two major kinds of costs:

- o capital outlays; and
- o recurrent expenditures.

When training programs are established or extensively upgraded, the major capital costs are usually borne by the donor agency. The host country cannot afford the entire capital costs and relies instead on donor assistance in the form of loans and grants.

Recurrent Expenditures

Donor agencies generally do not contribute to recurrent expenditures and

seldom contribute to such expenditures after the initial stages of the project. However, recurrent expenditures may be the most important factor in determining a program's quality and long-term success. Unless adequate funds for recurrent expenditures are budgeted, it is difficult to achieve and maintain a good program, even when the initial level of capital investment has been high. Furthermore, if recurrent expenditures are inadequate, the original capital investment may be lost, as equipment, machinery, and buildings rapidly deteriorate.

Personnel, supplies, and maintenance costs. It takes more than buildings and equipment to make a program good. Qualified instructors, individuals with the appropriate technical and pedagogical skills, are key factors in the development and maintenance of strong instructional programs. But unless salaries are reasonably competitive with those for other kinds of employment, it is difficult to recruit and retain the most qualified instructors.

Technical training programs require annual outlays for expendable supplies and materials. Unless resources are available for purchasing supplies and materials, instruction suffers. Annual outlays are also needed to maintain machinery, equipment, and instructional laboratories. Maintenance needs may range from lubricating oil to replacement parts for machinery and roof repairs.

Funds for recurrent expenditures are seldom, if ever, sufficient to attract qualified staff, to support instruction, or to maintain instructional laboratories. Faced with restricted budgets, decision-makers tend to reduce recurrent expenditures as much as possible, allocating available funds for support staff and practically nothing for instructional support or maintenance. This general pattern can be found in most training programs in Third World

countries, particularly in programs operated through government-supported agencies.

Consequences of limited funding. Although the lack of sufficient funds for recurrent expenses may result from an immediate budget situation, the detrimental effect is long-term. The most obvious result is the deterioration of costly machinery, equipment, and facilities. Because capital equipment deteriorates rapidly, the period of time over which it is amortized is insufficient to result in cost-effective training. If, for example, a piece of equipment that could be expected to last ten years with proper maintenance lasts only five years because maintenance funds are lacking, the equipment's cost effectively doubles. This is a widespread problem in most developing countries, causing training costs to be extremely high and to reach levels that would not be tolerated in developed countries.

In many instructional laboratories, equipment begins to break down because it is not maintained, or it becomes inoperable because spare parts cannot be purchased. Parts are often stripped from some machines to use in others, and improvised repairs are made. This may result in a deterioration in the quality of instruction. Students have a decreasing amount of equipment, and even the operable equipment cannot always be used to capacity. A good instructor may be able to make the best out of a poor situation, but this is usually not the case. Chances are, the instructor cannot even make repairs.

A common, but unfortunate, pattern followed by developing countries is one of first relying on donor agencies to build and equip facilities, and then supplying such a limited operating budget for recurrent expenditures that the

facilities cannot be properly staffed, operated, or maintained. Deterioration sets in almost immediately and continues until another round of donor support can be secured. Meanwhile, the quality of instruction also degenerates, and a costly capital investment is lost before it can return a reasonable value.

This problem is the direct responsibility of the host countries. In response to large and growing demands for training, programs are expanded beyond the governments' ability or willingness to provide operational support. Lured by the prospect of support from donor agencies, developing countries expand their programs without regard for the long-term financial responsibility expansion entails.

The Donor Agency's Responsibility

Although the host country bears direct responsibility for expanding programs without sufficient resources, the donor agency generally does little to prevent the foreseeable consequences. Donor agencies design projects and enter into agreements without giving sufficient attention to the amounts of funding that will be available over the long-term for recurrent expenditures. During the initial stages of a project, recurrent expenditures may not appear to be a problem because project funds may be used to cover what are normally operating expenses. Or the host country may temporarily shift resources from other activities to meet its commitments for the new project. The benefits of this financial version of musical chairs, however, are illusory. Eventually, the host country must finance the costs of the new activities along with those of ongoing commitments. In fact, financial obligations may actually increase, because a new project seldom completely replaces an older activity.

Ironically, a high level of donor assistance, itself, may present problems. Donor-assisted capital investments of up to \$10 million are common. But capital investment requires concomitant recurrent expenditures. Even if the ratio of recurrent expenditures to capital investments were only 1 to 10, a \$10 million project would require the host country to make an average annual expenditure of \$1 million. Although many Third World countries cannot afford to take on any additional obligations, few of these countries resist donor assistance, and some actively seek it.

To be prudent, designers of training interventions should determine the amounts of capital investments in light of the amounts of funding that can reasonably be expected to be available for recurrent expenditures over the projected lives of the investments. Ten percent of a capital investment is not an unreasonable estimate for recurrent expenditures. The expenditures can be expected to be even higher in many cases, such as those requiring sophisticated production equipment or instructional technology. Furthermore, recurrent expenditures can be expected to increase as equipment and facilities age, requiring more maintenance and replacement parts. Thus, recurrent expenditures must be computed with these factors, as well as periodic capital reinvestments, in mind.

In basing the size of an initial investment on the host country's ability to provide the necessary recurrent expenditures, donors should determine whether the host country can provide the funds annually without shifting resources temporarily from other activities to fill the immediate requirements of the new investment; and without disrupting other activities that are needed.

A.I.D. Assistance

In the training projects it funds, the United States Agency for International Development (A.I.D.) probably makes overlarge capital investments that, in the long run, render projects dysfunctional when host countries are unable to fund the necessary recurrent expenditures. Most likely, the host countries siphon funds from other activities in order to address the requirements of the A.I.D.-backed projects. Moreover, when A.I.D. completes its project cycles, which usually occurs within relatively short periods of time, the host countries probably shift some of these funds back to other activities, which have meanwhile deteriorated because of insufficient support. And unless new sources of income are generated along with the new projects, the host countries are left with additional commitments they cannot meet. Although these training projects are started with good intentions, many of them decline, joining other malfunctioning activities that are not fulfilling their purposes but are imposing financial burdens on already weak resource bases.

Alternatives for Donor

Given the host countries' lack of funds for recurrent expenses, what approach should donors take? First, sufficient attention must be given to a host country's ability to fund recurrent expenditures; the project design must fully address this question in order to prevent investment losses and to achieve program success. If a project is important enough for initial funding, then surely it is important enough for support to insure its long-term success.

Funding recurrent expenditures would alter project design. The original capital investment would probably be smaller, because some of the funds would be allocated to operational costs. In addition, the project would probably be funded over a longer period of time, spanning the approximate life-expectancy of the capital investment. Project activities would probably become more comprehensive, embracing all phases of implementation and operation.

Another alternative for donors is to fund programs that generate sufficient income for recurrent expenditures or that do not require substantial operating funds. Van Steenwyk (1984), for example, advocates the introduction of production activities into structured vocational training programs. Instruction is fully integrated with the production of items for sale in local markets, thus generating income to maintain the programs. The costs of instruction can also be lowered by increasing the use of shared facilities and equipment. Ahmed (1975, p. 61), for example, reports that in Thailand the cost of an evening program, which uses regular school facilities and staff, is less than half the cost of the regular day program. This finding is probably typical. In Jordan, the Vocational Training Corporation uses the secondary school vocational facilities for afternoon training classes.

Staffing

Few problems are more difficult than that of staffing, but few problems are more important to address. Program quality is directly related to the quality of the instructional staff. Resourceful and competent instructors can often provide good training programs despite shortages of instructional materials and limitations of machinery and equipment. But material resources

cannot easily compensate for poorly trained or unmotivated instructors. If the quality of the staff is poor, the program is probably poor, regardless of the quantity and quality of instructional materials, machinery, and equipment.

Government-sponsored Programs

Unfortunately, unqualified and poorly motivated staff abound in training programs in developing countries. This problem is especially acute in programs run by government agencies.

Inadequate Salaries. Low pay is one obvious reason for the difficulty training programs have in hiring and retaining qualified instructional staff. Individuals who possess the skills of good technical instructors also possess skills that command higher wages in other kinds of work. A good instructor has a combination of theoretical, practical, and organizational skills that are in demand in the work force and that can command perhaps two or three times what an instructor earns. Publicly supported training institutions find it particularly difficult to compete with the private sector in this regard.

Overstaffing. Although instructors are underpaid, it is common to find training programs that are overstaffed. The staff, however, may be underqualified. The reason for this is that the government is a major employer in many developing countries. Sluggish economies create strong pressures for substantial numbers of public sector jobs, even though the pay must be relatively low. Receptive to their political constituencies, government officials staff training programs in order to fulfill commitments, often giving scant attention to qualifications. Administrative jobs may be created as political plums, and

other jobs filled on the basis of loyalty, political affiliation, or ethnic or tribal origin. Training programs in developing countries commonly have an overabundance of administrators, support personnel, and instructors. The training institution is used as a repository of jobs, a place where favored individuals can be given livelihoods, with little attention to qualifications possessed, duties performed, or results obtained.

Although the ratio of administrative to instructional staff should be about 1:4, it is not unusual to find ratios that are considerably higher, in some cases approaching or exceeding 1:1. The ratios of instructional staff to pupils tend to be low: An instructor with one or two assistants may serve a class of ten or fifteen students.

Understaffing. Many instructors face large classes and few resources because money is unavailable or is shifted to programs with higher priorities. Skeleton programs exist largely to give the appearance that training opportunities are available. This pattern is common where resources are being shifted to new programs that have higher political visibility and greater social demand. Officials who wish to make their marks or governments that have just come into office often shift funds to demonstrate their powers or philosophies.

Obviously, both overstaffing and understaffing directly affect program quality. Overstaffing may, in fact, be the bigger problem because it can almost completely subvert the instructional function of the institution by promoting the notion that training comes second to the jobs created by the institution. In any case, donor agencies must seriously consider staff ratios when designing and supporting training programs. The programs should provide

reasonable levels of administrative, instructional, and support staff--enough staff to allow the institutions to carry out their operations but not so much staff that the institutions no longer have enough resources to support the instruction satisfactorily.

Attitudinal Problems. Another problem related to instructional quality is the poor attitudes of many staff members. There are several sources for the lack of motivation that plagues many of the training programs. Political appointees may be secure in their jobs regardless of performance. Instructors may consider their jobs as stepping-stones to higher-paying positions in the private sector and put little effort into teaching. Low-paid civil servants may seek supplementary outside work and relegate the teaching position to secondary importance. (Instructional loads of three or four hours a day are common, so an instructor can easily work at an additional job or two.) Instructors may become discouraged when, because even minimal support is lacking, they cannot make basic repairs or obtain the barest of instructional supplies.

Existing facilities and equipment are used but not repaired; students are taught with the minimum of effort; and little attention is given to instructional development. At best, the status quo of the program is maintained, but what often happens is that the program loses substance with predictable regularity.

Poorly trained instructors. Inadequate teacher training may contribute to the lack of qualified instructors. The preparation of vocational instructors requires both theoretical and practical instruction. Without practical work

experiences, there is little chance that aspiring instructors will be able to relate well to industry and business. Too often, teacher preparation programs are oriented around theoretical instruction. This is because many teacher trainers lack industrial experience, because greater status is attributed to academically related instruction, or because theoretical instruction is simpler and cheaper to provide than practical instruction. Lecturing from notes is easier and less costly than establishing and maintaining an instructional laboratory.

The instruction used to prepare teachers is often divided into two components: (1) theoretical lectures given by individuals who are called professors; and (2) practical instruction relegated to assistants who may have as little practical work experience as the aspiring instructors they are preparing.

Inadequate labor supply. For government-sponsored programs, the quality of an instructional staff directly affects the ability of a training program to address skill needs of employers. Instruction may be of such poor quality that the trainees are of little use in the work place. The skills taught may have little relevance to the skills needed on the job. Because recruiting, training, and retaining qualified staff presents such a persistent problem in developing countries, donor agencies cannot ignore it in the design and implementation of skill-training programs. A strong argument can be made that one of the more important project design tasks is to insure that there are adequate numbers of trained instructional staff.

Employer-Based Programs.

Generally, employer-based training programs have less difficulty recruiting and training staff. Such programs usually have the financial resources to provide adequate support for instruction and to provide reasonable salaries for instructors. Employers also have pools of trained technicians from which they can recruit training staff. An employer can comb the ranks of workers and foremen for individuals who have the practical experience and technical knowledge necessary to instruct others.

Instructors recruited from within firms, however, usually lack adequate teaching skills, even though they possess technical knowledge and related skills. And individual firms usually lack the capability to provide training in teaching skills to instructors who are unable to teach effectively. Smaller firms generally cannot establish in-firm training program and must rely on outside sources for trained workers. Formal educational programs tend to have the most persistent problems with staff.

Approaches to Staffing Problems

A number of policy positions merit consideration.

Teacher-training assistance. First, assistance to skill-training programs should be accompanied by consideration of the quality and availability of staff. Moreover, it is not enough just to identify potential instructors; their ability to conduct successful training must be thoroughly assessed to avoid problems later on. Assistance to skill-training programs generally requires assistance to instructor preparation programs.

In-service training. Periodic instructor upgrading through in-service training is not common in developing countries. Given the high staff turnover, the lack of qualified teachers, and the widespread need to strengthen instruction, however, short-term upgrading is useful. It is also relatively inexpensive. An added advantage is that the instructors are already employed, which minimizes the problem of attrition between training and employment. Major areas of emphasis include greater practical work experience, teaching skills, and methods of organizing and managing an instructional laboratory. Periodic, short-term refresher and upgrading courses probably should be included in most project designs.

Certification. Instructor certification programs can be useful. Where certification programs do not exist, donor agencies may want to assist in establishing them. The function of certification - to ensure that instructors are qualified - is often subverted by strong teacher unions, political influence, tradition, or simple bureaucratic inefficiency. In such cases, complex problems can be expected, but the problem of staff quality must, nevertheless, be directly addressed.

Staff ratios and instructional support. Careful attention should be paid to staff ratios and instructional support. Teacher to student ratios of about 1:25 are good, provided that resources are also available to support instruction. Balance should be maintained between staff salaries and other instructional costs. Although lower teacher ratios probably could not be financially justified, higher ratios inhibit good instruction. The ratio of administrators to instructors should probably be kept in the range of 1:4, and the tendency to create top-heavy organizations should be avoided.

Finally, although the quality of instruction in all training programs is directly related to the quality of the instructional staff, different training alternatives vary considerably in their ability to employ, retain, and use staff. Planning decisions should reflect this fact.

Program Management

Training systems are complex enterprises. One of the more taxing tasks associated with training programs is that of establishing and maintaining systems to manage the human and material resources that are involved.

Managerial Staffing Problems

Management concern focuses on instructional staff but also covers support personnel and administrative staff. The duties of all these employees must be well defined, coordinated, and integrated into the operation of the programs. Even when employees are well trained, qualified, and motivated, the management task is complex and demanding. This task is particularly daunting when, as is the case in developing countries, there seldom are enough adequately trained individuals available to staff the programs.

The problem is most severe in formal vocational training programs, which have difficulty paying competitive wages and may be saddled with employees appointed for political reasons. Furthermore, although administrators who are trained to manage academic educational programs are not necessarily qualified to manage vocational training programs, which entail significantly more complex and markedly different management tasks, there are few opportunities in devel-

oping countries for people to gain training or experience in managing vocational programs. As a result, administrators of vocational programs are often recruited from academic programs. Even those individuals who have come up through the vocational administration ranks may have had few opportunities to learn good management practices.

Poor Management

Poor administration and management linked with unqualified and, perhaps, poorly motivated staff generates undesirable and predictable results. In most developing countries, in fact, well-managed programs are the exception, rather than the rule. Instructional laboratories are set up improperly; tools, equipment, and machinery are poorly maintained; an inordinate amount of supplies and tools are lost to theft and breakage; systematic maintenance and repair are lacking; maintenance supplies may not be available when needed; instructional support materials may not be available at all; and general logistical support may be lacking. Conditions like these are what prevent training from effectively addressing the needs employers have for employees with particular skills.

Management Tasks in Vocational Programs

Vocational programs entail particularly complex management tasks because of the physical resources involved. Unlike programs based on academic or theoretical instruction, vocational and technical programs, if carried out effectively, involve a considerable amount of practical instruction incorporating the tools and machinery of the work place. But the instructional

management task is even more complex and demanding than the management task ordinarily associated with work, because the practical work activities must be fully integrated and coordinated with the instructional program to be presented to groups of trainees.

In addition to providing for appropriate work experience and instruction, program managers must provide a purchasing plan for instructional materials, must adopt long- and short-term maintenance schedules for machinery and equipment; must ensure that parts are on hand when needed for repairs; must set up tool-and-supply monitoring and security systems; must provide for daily cleaning of the laboratory; and must engage in instructional planning. Moreover, instruction may have to be carried out under conditions where dust, dirt, moisture, and heat are ongoing concerns.

Management Levels

Program management occurs on at least three levels. The instructor is concerned mainly with the daily operation of the instructional laboratory. The department chairman is mainly responsible for overall coordination and planning. The institution administrator is largely concerned with policy, evaluation, and financial matters. The functions at all three levels must be coordinated and fully integrated: Failure at any one level diminishes management effectiveness at the other levels and lowers the overall quality of the instructional program. In the design of donor-assisted training programs, careful attention must be given to the management capability at each of these levels. The failure to deal with the whole range of complex management tasks that determine the success of a program may, in fact, be one of the biggest problems of training programs in developing countries.

Management Training

Because program management is such an important concern, and because poor management is so widespread, donor assistance probably should not be given to support the establishment or upgrading of a vocational training program until the required program management capability is assured at all three levels. It is not enough to conduct management or upgrading concurrently with other project activities, because management capability is most critical at the beginning, when damaging, and perhaps irreversible, decisions can hurt or ruin a project. The initial phase is also when some of the most complex management problems are likely to occur. Unfortunately, few projects are designed to begin with management training and to proceed with other activities only after there is assurance that the management capability is sufficient.

Management skills at the instructor level. When management training is provided, it is often limited to the administrative leadership. Even when the training extends further down the hierarchy, it is rarely provided to instructors. Although all three levels have important, varied, and interdependent functions, a strong case can be made that where it is impossible to provide program-management training at all levels, the priority should be on developing good management skills at the instructor level. This level is where the major function of the program--instruction--is carried out. If there is to be a weakness in the system, it should not be at the instructor level. The greatest losses in tools, equipment, materials, and physical plant occur at the instructor level as a result of poor program management skills. Moreover, good instructors probably do a reasonably adequate job despite weak administration, but good administrators have an extremely difficult time providing good programs with weak instructors.

Limitations of management training. Host country personnel commonly receive participant training, including study tours, conferences, and institutional training, from the donor agency which also send personnel to the host country to conduct training. These experiences may be beneficial, but they may not be sufficient to impart good management skills. Those undergoing training need the opportunity to deal with program management problems within the instructional context in which they will be working: to experience power outages, currency controls, poor staff morale, local traditions, political interference, and poor transportation in the everyday context in which they will have to deal with the problems.

Training Content

Every instructional program must provide theoretical as well as practical instruction. The training content may be provided by instructors, experienced workers, technical experts, course materials, or any other source. Moreover, the training content must accord with the function of the program, and there must be a way of periodically revising the content in order to accommodate changes in production technology.

Traditional Training Content

Technical content varies with the different training alternatives. Work skills are taught through traditional apprenticeships, or on-the-job training. This approach is usually labor-intensive and incorporates adapted technology. The journeyman possesses the work skills, and the novice picks them up through observations and learning by trial and error. Substantial

numbers of new workers learn their skills through informal means from their experienced colleagues.

Skills learned in this manner may be sufficient for the simple technology being used and for the range of products being produced, but there may be severe shortcomings and limits on the kinds of skills that are transmitted. For example, although apprenticeships may provide ample practical experience, they usually impart little theoretical understanding. The apprentice usually learns a limited range of skills, which restricts the general scope of work activity that he or she can perform. Another shortcoming of this approach is that new technology and work processes are only slowly integrated into traditional work methods.

Skills Formation and Transfer

For more complicated production technology, two problems generally need to be addressed:

- o the formation of skills; and
- o the transfer of these skills to workers.

Developed countries (Westphal, Rhee, and Pursell, 1981; King, 1977; Dahlman and Sercovich, 1984) are the most important source of skill formation. Skill needs are defined by many factors: imported machinery, turnkey plants, joint ventures, foreign licensing, nationals who travel abroad, informal and formal technical assistance, journals, and copied foreign products.

The actual transfer of skills is difficult to gauge, but over the long

term it appears substantial. "Indeed," Westphal, Rhee, and Pursell (1981) suggest, "at least some of the technological information underlying the initiation of industrial activities in developing countries almost always comes from abroad" (p. 28).

There are two important factors conditioning skill formation:

- o Technical skills cannot be transferred into a vacuum; local capabilities are needed to assimilate foreign technological elements.
- o Considerable adaptation is generally required in order to gain command over the new skills.

Adaptation may include using different raw materials, altering the mix of machinery, or breaking production bottlenecks. Nonetheless, skill imports considerably expand local capabilities. "The more technologically dynamic firms....," Dahlman and Sercovich (1984) observe, "are known for making extensive use of foreign technological elements while investing heavily in local technological effort and technical training, and for using what they learn at each stage to re-evaluate their strategies in the technological area" (p. 94).

Access to Technology. In general, then, some firms have access to technology and the requisite training content by virtue of the fact that they have better links to the sources that produce the technology. These larger firms tend to be companies that are members of international associations, subsidiaries of multinational corporations, or establishments that have licensing franchises with firms in more developed countries. In Jordan, for example, the petroleum refinery gets training materials through an association

serving refining corporations. The major task of the training department is to translate these materials and adapt them to in-firm training activities. The cement company obtains training materials from an international group serving cement manufacturers (Herschbach, et al., 1985). The company's major training task is adapting these materials to its own training population and firm environment, not identifying or generating new materials.

Smaller firms in developing countries, however, often lack the international contacts, experience, knowledge, or resources to obtain training technology. Because the arenas of these firms' activities are restricted, the firms must rely on indirect sources for training content if, indeed, they provide training.

Sources of Content

Formal training programs certainly need a source of training content. In the absence of such a source, instruction may increasingly take on the characteristics of the traditional approach, where skills are learned through work experience. In that case, formal instruction largely imparts traditional job skills that can also be learned by more direct methods from experienced workers. If formal instruction is to contribute to a growing skill and knowledge base, new training content must be systematically infused into the existing instructional repertoire. One way in which this can be done is to maintain a close link with firms, especially those that are the most innovative.

One major advantage of the competency-based approach to the design of

vocational instruction is that training content is initially determined through an analysis of job tasks at work sites. This analysis establishes content validity, an essential factor in assuring that training is relevant to work. But training content can also be determined by going more directly to the sources of technology. That is, it is possible to bypass the firm and go to sources of instructional materials that reflect the new technology. These may be the same international training sources that the larger employers use, or they may be sources that specifically address training-program design.

Instructional Materials. Many of the mediated instructional materials that are available have considerable potential to improve the quality of instruction because they are superior in content and design to the instruction typically provided by the local instructor. Thus, this form of educational technology can be used to upgrade current training staff as well as to instruct trainees. This is particularly true in occupational areas undergoing rapid technological change, where relatively inexpensive technology can provide an effective way to infuse new skills and knowledge into vocational instruction.

In the case of firms, much of the training content is embedded in the new technology being used; training content is a product of technology transfer. Formal programs, on the other hand, do not always have direct access to new training content. In fact, a major problem faced by formal programs in lesser developed countries is the lack of access to information about training materials.

The main sources of information in developed countries tend to be professional organizations, curriculum networks, commercial publishers,

equipment vendors, and the like. These sources provide trainers with a constant flow of information concerning curriculum and instructional materials. In lesser developed countries, however, the flow of information tends to be limited. Commercial markets, for example, may be restricted, and professional organizations may not exist. One policy alternative may be to stimulate the local production of training materials and the development of information networks, as opposed to directly supplying curriculum and instructional materials. Another alternative may be to establish regional networks and clearinghouses to provide access to training materials.

A substantial collection of training materials already exists in the United States and elsewhere, which minimizes the need to develop completely new materials (Cuervo, 1982; Herschbach, 1984). The existing materials provide a variety of means for addressing training requirements. The Agency for International Development can match resource needs with sources of U.S. training technology, but for greatest effectiveness, the linkage should probably be structured within assistance projects.

Barriers to Using Materials. A common problem with using programs of instructional development is poor cost-effectiveness. Curriculum development is time-consuming and expensive. High levels of use over an extended period of time are necessary in order to transform what tends to be an initially expensive instructional system into a cost effective operation. In addition, technical materials must be revised every three to five years. In many countries, the population served through vocational education is so small that investments in instructional development cannot be justified. This suggests the need to adapt existing training materials rather than develop new ones, and to regionalize training services.

Types of Content

Training content can be classified into a number of categories (Wallender, n. d.).

Basic skills training. An important category that is often overlooked is general knowledge. Individuals who can read, write, and do simple arithmetic calculations fare better in the labor market than individuals who cannot (Colclough, 1982). Possession of basic skills makes a worker more useful to employers. The existence of a pool of workers with basic skills is fundamental to a country's ability to stimulate economic development and a reservoir of individuals with primary and secondary education is necessary for sustaining growth once an economy begins to develop (Kaneko, 1984).

Moreover, basic skills are an essential factor in determining whether students can profit from vocational instruction. Van Steenwyk (1984), for example, found that the lack of basic academic skills constituted a major barrier to vocational instruction in Honduras. Training centers reported that 62 percent of entering students had learning deficiencies, which limited their ability to undergo and profit from training (p. 32). The lack of adequate pre-training preparation constitutes a major reason why those who have completed training perform poorly in jobs in many developing countries. Formal vocational programs can, and do, instruct trainees in the basic skills needed to master a vocational skill. Often the instruction merely adapts an academic skill to the performance of a job task, but vocational instruction nevertheless includes considerable exposure to the use of basic skills. The inclusion of general education is one reason formal vocational education is

often less job-specific than some critics would like it to be. Providing general education distinguishes formal vocational programs from employer-based training and gives formal training long-term, rather than immediate, implications for job development (Kaneko, 1984).

Occupational training. Occupation-specific skills are those commonly needed by firms producing similar products. These skills allow the trained entry-level employment in a particular industry, but the trainee must receive the specific techniques and processes used by the employing firm. Instruction is developed by identifying the technical and theoretical skills generic to a range of related jobs, and grouping these skills into related units. Standard task analysis procedures are used to identify and group these skills. Broad coverage is traded for depth of instruction.

Formal training programs provide a good source of occupation-specific training and enhance mobility of trainees by preparing them to pursue employment in a range of jobs and with any number of firms in the industry. Occupational training is general vocational instruction, and if it is good instruction, it develops the general ability of firms in the host country to assimilate technological change and to accommodate adapted technology. Occupation-specific training provides a foundation of theoretical and practical instruction, which can serve as the basis for accommodating new work skills - a capability that is less developed by the firm-specific training that employers generally provide.

System-specific training. System-specific training, which teaches the skills required to produce a specific product (Wallender, n. d.), may be

provided by individual firms or by a center serving a group of firms that manufacture the same product. Formal programs seldom provide system-specific training.

Firm-specific training. Firm-specific or job-specific training focuses on clearly defined sets of skills that prepare individuals to perform specific jobs. The training can be provided at the job site, using the machinery and equipment of production, or through a combination of in-firm instruction, and organized off-site classes. Except in large firms that maintain training departments, a great deal of firm-specific training is conducted on an ad hoc basis, especially by small firms. This training, which is often improvised to fill urgent and specific needs, may range from short-term, low-skill training under direct job supervision to more organized and structured forms of instruction. Small firms often need to train only one or two individuals in highly specific skills. Such a need is too small to justify creating an organized training program but is too important to ignore.

Problems of Small Firms

In addition to lacking access to new technology, small firms often take a static approach to training because they must rely heavily on experienced workers to train new employees. Such conditions may limit the skills that are transferred to new workers, and without regular upgrading, experienced workers may become outdated. One training priority is to provide a way for small firms to infuse new technical skills into on-the-job training when need be. Short-term training programs serving groups of small firms have the potential to address this need if the quality of training is high. Formal training

programs are generally limited in this realm, because they are unable to stay abreast of current technology and to impart these skills to trainees. Formal programs can, nevertheless, build the foundations of skills that enable individuals to master in-firm training. Indeed, small employers tend to rely heavily on formal sector programs to fulfill this function."

Types of Skills Taught

Training content can be classified as cognitive, psychomotor and affective skills.

Cognitive skills. Cognitive skills involve mental processing such as using theoretical knowledge. Structured programs are good at teaching cognitive skills, which often require foundations of more general academic skills on which to base the specific job skills. In other words, many job skills are mere adaptations and extensions of basic academic skills. This is why a basic general education is so important. Although cognitive skills need to be relevant to work, they probably can be learned better with formal training, in either the public or private setting, than with direct experience, such as that provided by on-the-job training. Jobs that require significant use of cognitive skills-as do the jobs of technicians, for example-are best learned in formal programs.

Psychomotor skills. Some jobs require mainly psychomotor skills and involve the direct manipulation of tools, machinery, and equipment. It takes a long time to master many manipulative skills, especially those that involve crafts and considerable work by hand. Formal training programs usually do not

provide the extensive practice necessary for mastering psychomotor skills, which is why practical work experience is useful. Jobs requiring mostly psychomotor skills can best be learned directly on the job. Many jobs involve combinations of cognitive and psychomotor skills, which can usually be best learned through combined classroom instruction and work experience.

Affective skills. One of the most important categories of skills involves affective learning--habits, attitudes, and values important to job performance. Many employers agree that workers' attitudes, especially those toward low-status jobs, constitute serious obstacles to employment, good workmanship, and productivity. In recent studies conducted in Jordan (Herschbach, et al., 1985), Honduras (Kelley, et al., 1985; Cuervo, 1985), and Panama (Cuervo, 1985), for example, employers consistently identified workers attitudes as major training concerns. Large numbers of employers in most countries believe that the qualitative aspect of the training-employment link can be strengthened by addressing the affective component of training. In fact, it is not uncommon for employers to express willingness to provide training in the cognitive and psychomotor components of a job if there were individuals with "good attitudes" available for hire. Imparting habits and attitudes is a difficult task at which vocational instruction has not been successful. Donor-supported programs have made many attempts to introduce career education and guidance and other materials designed to encourage the formation of positive work habits and attitudes. These attempts have generally failed. One problem is the extreme difficulty of transmitting materials directly from one social or cultural context to another, which donor-assisted programs often do. What is developed for one context may be completely irrelevant for another or may ignore subtle differences between the

contexts. Even where instructional materials are locally produced, the results have not been good because it is difficult to affect habits and attitudes with instruction. The home and the community are major, dominating influences, which overshadow the efforts of individual teachers or programs. However, the development of good work habits and attitudes has not received the kind of attention given to cognitive and even psychomotor learning. Designing instruction for improving work habits and attitudes, therefore, remains one of the most important challenges facing program designers. Low productivity, poor workmanship, and lack of innovation may result as much from inappropriate behaviors as from deficiencies in technical skills.

Summary

Four conditions directly contribute to effective linkage between training and employment:

- o the availability of financial resources, especially support for recurrent expenditures;
- o adequately trained staff;
- o good program management; and
- o a source of technical content.

These conditions are interrelated and when together determine quality of the instruction being provided. Establishing a strong link between training and employment also means enhancing program quality. Programs of poor quality do not serve employment needs.

Working Relationships

A third category of linkages between employment and training includes the routine, day-to-day working relationships between those who employ skilled workers and those who train them (Reinhart, 1985).

Organizational Collaboration

Effective linkage between trainers and employers does not occur automatically. The two groups must collaborate to identify the characteristics employers desire in trainees, to develop training content, to provide practical work experience, to evaluate training, and to ensure that small firms can participate in training programs.

The desire to maintain autonomy and flexibility and to protect resources makes many organizations shy away from coordinating their activities with those of other organizations. Coordination between employers and trainers, however, tends to increase the resources available to both groups and provides them with information that enhances their flexibility.

Collaborative relationships between trainers and employers contain at least four elements:

- o Formalization of the policies and procedures guiding the activities of both parties;
- o Clear rules for making decisions;
- o An organizational network that allows different groups to work as a unit to address various tasks; and
- o Good communication.

These elements must be embedded in the project design.

Incentives

In general, all parties must perceive benefits from collaboration (Schmidt and Kochan, 1977). Incentives can take a number of forms, including monetary rewards, promotion, increased services, and enhanced status, among others. To ensure that incentives are built into a project design, planners must define project and identify the incentives that are needed to achieve goals. These incentives, along with any required support, should be included in the project from the initial stages.

Power and Authority

In designing training programs for developing countries, identifying and understanding the groups and individuals who wield power and authority is crucial to the success of the programs. Approaching only the technical aspects of a training program, while ignoring the political, social, or economic aspects, can doom the program.

To be prudent, program designers should carefully assess what can and cannot be accomplished in a given setting and should plan only those activities that have reasonable chances of succeeding. Designers may spread project activities and authority over more than one center of power or may set up alternative centers of control, but such maneuvers are complex tasks fraught with risks.

CHAPTER THREE: TRAINING ALTERNATIVES

There are many ways to provide vocational training. Some training alternatives are designed primarily to accommodate particular settings, and others to achieve particular objectives. Training alternatives also differ in ability to address the conditions that determine how strongly training is linked to employment. How well the structure of a training alternative addresses the conditions in a particular location largely determines whether that alternative can provide the basis for a successful training program.

This chapter provides an analytical tool for evaluating the effectiveness of training alternatives in different training contexts. The chapter also describes several training alternatives, including employer-based training, released-time training, formal vocational education programs, production centers, service centers, and extension services, and discusses competency-based training.

Program Design

The design of a training program must address the conditions that foster linkage between training and employment. Although linking conditions are essential for all training alternatives, the relative importance of particular conditions shifts according to which training alternative is being used. The service-center alternative, for example, requires attention to who wields power and authority within the entire community, whereas the on-the-job-training alternative requires such attention only within the specific firm that is providing the training.

For each training alternative, it is possible to identify the requirements for each condition, the means of addressing each condition, the probability of meeting the requirements, and the consequences of not meeting them. Figure 1 provides a framework for evaluating training alternatives in light of linking conditions. This analytical matrix allows planners to determine whether a particular training alternative can be successfully implemented in a particular location. The matrix can also help planners identify the conditions to address and the design elements to build into a project.

The existence of favorable conditions for implementing a particular training alternative depends on the context, or environment, in which the training occurs. The scope of the environment may be national, regional, or local, or may be limited to one firm or a group of firms. Economic, political, social, and cultural factors within a given training context govern whether the essential linking conditions can be addressed to allow successful implementation of a particular training alternative.

Linking Conditions	How does training alternative address linking condition?	How can Linkage be enhanced?	What happens if linking condition is not addressed?
<p><u>Quantitative Factors</u></p> <p>Labor market trends</p> <p>Micro data</p> <p>Local data</p> <p><u>Qualitative Factors</u></p> <p>Training costs</p> <ul style="list-style-type: none"> o Capital expenditures o Recurrent expenditures <p>Staffing</p> <ul style="list-style-type: none"> o Administrative o Instructional o Provisions for training <p>Program Management</p> <ul style="list-style-type: none"> o Institutional o Departmental o Instructional <p>Training Content</p> <ul style="list-style-type: none"> o Characteristics o Availability <p><u>Working Relationships</u></p> <p>Organizational collaboration</p> <p>Incentives</p> <p>Power and Authority</p>			

Figure 1. Framework for evaluating a training alternative's ability and need to address linking conditions.

A training alternative cannot be successfully implemented if the training context is hostile or non-supportive. Financial straits may preclude a government from providing funds to meet training costs, for example, or political control of staffing may interfere with recruiting trained individuals. A program's approach may conflict with tribal or ethnic values; incentives may be lacking; or animosity may exist between employers and public agencies. In any case, program planners must carefully evaluate the training context, identify existing constraints, and decide whether the necessary linking conditions can be developed. Figure 2 shows the training context as a factor of linkage.

A program designed for one training context can seldom be implemented successfully in another training context. What works well in one country's training environment may not work well elsewhere. Even when the environments of two countries appear similar, the training contexts may differ significantly and may provide different obstacles to developing the conditions that are necessary for linking training and employment. To be successful, a training alternative must address the linking conditions in light of the specific context in which the program is implemented.

In designing training programs, planners must make at least three kinds of judgments, as depicted in Figure 1. First, the linking conditions must be assessed to determine which conditions are already present and which need to be developed. Second, planners must gauge the degree to which the training context supports favorable conditions and must decide how to develop these conditions. Third, planners must carefully weigh the consequences that would

Linking Conditions	Training Context	Training Alternatives
<u>Quantitative Factors</u> Labor market trends Micro data Local data	Political, economic, cultural, and social factors that affect	<u>Employer Based Training</u> Organized classwork On-the-job training Accelerated training <u>Released-Time Training</u> <u>Formal Programs</u> Core programs Cluster programs
<u>Qualitative Factors</u> Training Costs Staffing Program management Training content	 a training alternative's ability to address linking conditions	<u>Production Centers</u> <u>Service Centers</u> <u>Extension Centers</u> <u>Competency-Based Training</u>
<u>Working Relationships</u> Organizational collaboration Incentives Power and authority		

Figure 2. Training context as a factor of linkage.

befall the training alternative if particular conditions were not adequately developed.

Planning and designing a training program is a complex task, which requires as much relevant information as possible for making decisions. Judgments should have valid bases and should be consistent. Planners can

improve the quality of their judgments by understanding the various training alternatives, the conditions that determine success, and the probability of succeeding in a given context.

To choose which of the training alternatives is most appropriate for a particular environment, program designers need to know the structural characteristics of the alternatives and how they address the three types of linking conditions.

Employer-Based Training

Most vocational training conducted today in developing countries is employer-based. The number of trainees in employer-based programs far exceeds the number in government-supported vocational schools and programs. The cost of employer-based training is largely borne by the trainees, their families, or their employers. To provide formal training on an equal scale would require considerable greater resources than those now supplied by governments.

Large firms, particularly those closely associated with international firms, trade associations, or public service functions, tend to have access to training resources and have the financial resources to use several in-house training alternatives. Small firms, however, tend to provide training on an ad hoc basis, and very small firms rely heavily on informal apprenticeships (Allen, 1982; Anderson, 1982). Most firms provide training on an on-going basis, although much of it may be informal, one-to-one training.

To guard against the problems that can result from losing key personnel, many firms train workers to take the places of such personnel if the need arises. This practice sometimes causes considerable rotation of staff and jobs.

The task of retraining workers and upgrading their skills is considered highly important for increasing productivity and improving the quality of work products. Recent studies conducted in Jordan (Herschbach et al., 1985) Honduras (Kelley et al., 1985; Cuervo, 1985) and Panama (Cuervo, 1985) found that employers were most concerned about upgrading the existing work forces. Employers reported that workers had some skills but not enough to use new machinery and equipment, to increase production levels, or to improve product quality.

Employer-based training takes three forms; organized classwork; on-the-job training; and accelerated training.

ORGANIZED CLASSWORK

Government agencies, public service organizations, and large firms in the private sector often provide organized in-house instruction to train new workers or retrain incumbent employees to perform job-specific tasks. This approach is effective when formal skills are taught to large groups by trained instructors. Labor unions, independently or together with employers, sometimes participate in the training process and provide training funds or arrange for the funding.

Quantitative Factors

To provide in-house instruction, only the needs of the individual firm must be assessed. The interval between identifying the labor need and providing the training is short. Appropriate programs and training requirements are structured to alleviate shortages or deficiencies in skills. Firms usually have difficulty projecting their needs for highly specialized occupations that use new technologies, but long-term training must be based on sound projections.

Qualitative Factors

Costs

The capital investment required for employer-based organized-classwork training is low, because the training is conducted in-house. Using the firm's existing equipment and facilities also keeps recurrent expenditures low. When large numbers of employees are involved, the training is cost-effective, because the benefits flow directly to the employer in the form of a more competent work force. To maximize the effectiveness of the classwork, the program should use the appropriate educational technology.

Staffing

Qualified instructors are the key to success for organized classwork. In addition to theoretical and practical skills, instructors must have teaching ability. This combination may not be readily available, and instructors

recruited from a firm's technical staff may need pedagogical training. Supervisors of training in large firms can help to maintain program cohesion, priorities, and quality.

Program Management

Top managers of the firm must support and endorse the organized classwork for the training program to be successful. Effective in-house training requires planning and coordination by a training supervisor, plant manager, or personnel director. Firms may need to develop an integrated and coordinated approach to training. Wallender (n.d.) observes that it is useful to think of manpower development as a means to "simultaneously build...capability at the worker, technician, managerial and executive levels, to maintain an effective organization."

Training Content

A major advantage of in-house training is that the firm can control the content and the quality of the instruction. The training teaches the specific skills needed at the firm and may include management training. To guarantee success, the program should follow a prescribed, coherent methodology with objectives that can be measured to determine the results of the training. Harvey and McShane (1981) recommend at least 30 hours of formal classroom instruction and/or on-the-job training. Practical work experience complements and enhances the theoretical concepts presented in the classwork. Training content should be periodically revised to reflect changes in production technology.

Working Relationships

Although it is crucial to carefully assess what skills are needed and what deficiencies exist, many firms lack the ability to conduct sound needs assessments. And although large firms generally have access to training materials, in-house instructors may not be able to adapt the materials to the firm's needs. Many firms need assistance to develop more effective training departments, but the sources of such assistance may be limited in their countries. As a result, firms must coordinate their efforts with those of external training sources.

Organized-classwork programs must provide incentives for employers and trainees. Management must be able to measure the benefits of its investment; and employees who successfully complete the training--thereby increasing their value in the labor market--should be rewarded with advancement, pay raises, new responsibilities, or changed status.

ON-THE-JOB-TRAINING

Small and medium-size firms usually cannot afford to provide organized in-house instruction, let alone maintain training departments. Such firms use on-the-job training (OJT) extensively. Indeed, OJT is one training alternative that is employed in practically every developing country.

In the simplest form of OJT, a new employee is assigned to work with an established worker. The instruction occurs as the job is being performed: The incumbent worker shows the novice how to perform the tasks. OJT is

effective for teaching psychomotor skills, but it is an inferior method for imparting technical and theoretical knowledge. OJT is useful, however, for teaching the practical application of theory to trainees who have already learned the theory.

Quantitative Factors

As with in-house instruction, only the needs of the individual firm must be assessed. The interval between identifying the labor need and beginning the training is short, although on-the-job training may last much longer than other types of training. Employers in developing countries complain that trainees' poor educational backgrounds limit the trainees' potential for learning new skills. The employers also complain that inordinate amounts of time lapse before the trainees' performance reaches acceptable levels. Cuervo (1985b), for example, found that employers in Panama had to provide one to two years' on-the-job training to new employees before their skills reached adequate levels.

Qualitative Factors

Costs

OJT is usually less costly than other training alternatives. New employees are immediately productive, and because fellow workers provide the training, firms do not have to hire special instructors. Teaching aids and instructional materials are not used. In fact, no training budget is necessary.

Staffing

Using established employees to train new workers has several drawbacks. The trainers generally lack formal teaching skills, which limits the quality of the instruction. Furthermore, the trainers may deliberately fail to teach the full range of skills needed for optimal performance. Where employment opportunity is generally lacking, where competition for jobs is fierce, and where wage differentials between work levels are significant, established workers may be reluctant to teach new workers thoroughly enough to threaten the established workers' job security.

Program Management

OJT is a static approach to training. It is used mainly to transfer existing skills, and is not a good method for upgrading skills. In firms that use no other type of training, the workers responsible for training new employees have no opportunities to upgrade their own skills to keep pace with changes in production technology. Without complementary formal instruction, OJT is not very effective for training managers, foremen, and other mid-level and senior employees.

Training Content

OJT can be used to teach specific skills with the most modern industrial techniques and machinery, but all too often the novices learn outdated techniques on old equipment. The novices learn only what the established workers know or are willing to teach. Those selected to be trainers are often

long-time workers, whose skills may not embrace the newest technology. Thus, the training process may simply pass obsolescence on to new workers.

Working Relationships

On-the-job training programs need regular infusions of new content. Theoretically, hiring individuals who had completed formal training programs would be a method by which firms could infuse their work forces with new knowledge. Many existing formal programs, however, seem to lack the capacity to stay abreast of technological developments and to impart advanced skills to trainees. This is particularly a problem for small firms, which have modest training resources and limited numbers of trainees.

ACCELERATED TRAINING

A third type of employer-based training is accelerated training, or short-term training as it is known in the United States. Accelerated training is relatively brief and can be phased in and out according to need. By using the existing facilities and equipment of participating firms, employers can limit their costs and can design the training to address immediate needs for specific skills. Accelerated training lasts less than one year. The program, which a training agency plans in conjunction with one firm or a group of firms, uses part-time instructors. Individuals who complete the training program are placed in jobs with the participating firms.

Quantitative Factors

Accelerated training programs have considerable potential in developing

countries, where skilled labor is in short supply. Because the quality of training is poor and uniform training standards are lacking, even those individuals who have completed structured training programs tend to be inadequately prepared for work. In recent studies conducted in Jordan (Herschbach et al., 1985) and Honduras (Kelley et al., 1985; Cuervo, 1985), employers expressed strong interest in retraining and upgrading their existing labor forces. The general view was that it was possible to hire partly skilled workers but not adequately skilled workers. Productivity and the quality of work suffer as a direct result of this problem, which is common throughout the developing world.

Accelerated training can be a cheap way to address labor imbalances caused by structural unemployment--unemployment caused by lack of the skills required by the market place. Many countries have an apparently substantial surplus of academically trained individuals who have adequate educational backgrounds but who lack the technical skills that are in demand. By building on the existing academic achievements, accelerated training can provide the specialized skills of production needed to make these individuals a source of highly skilled labor.

Short-term courses may be particularly important because there are so many small firms in developing countries. Large, long-term, institutionalized training programs do not serve the needs of small firms, which need training for relatively small numbers of individuals at any one time. Moreover, small firms have immediate needs that can be addressed better by short-term accelerated training programs than by large formal programs, in which too much time usually elapses between the identification of needs for particular skills

and the provision of the skills by training. Short-term courses can be tailored to specific production problems more easily than can large, long-term programs, which tend to be general.

Qualitative Factors

Costs

Accelerated training is relatively inexpensive, because there is little need for additional investment in facilities, equipment, or staff.

It can be argued that the best time to upgrade a work force is when the prevailing economic conditions are bad, as they are today in many developing countries. Training is less costly when production is slack, because the opportunity costs are lower. Training decreases the time available for production, causing problems when there are orders to fill and production quotas to meet. When demand for production is low, however, training can occur during periods when employees would otherwise be idle.

Staffing

Instructors are part-time. Many are hired from the cooperating firms and return to their regular duties when the training cycle is completed. The training agency requires a permanent skeleton staff of at least one or two individuals for long-term administrative coordination. Short-term training for potential instructors from industry may be needed.

Program Management

Special populations can be targeted in what are basically ad hoc arrangements between individual employers or groups of small firms and a training agency. A project can vary from a few days of intensive instruction to a few months of training. Participating employers supply the facilities and equipment, specify the course content, and provide financial support. The training facilitator coordinates the project, designs the instruction, and follows up.

Training Content

One strength of accelerated training is the direct and immediate response it offers to specific employers' needs for particular skills. The employers participate in identifying their training needs and specifying training content, so that training is linked with work. Furthermore, the training output matches the demand, because those who complete the program are immediately placed in jobs.

Working Relationships

The key element in accelerated training is the collaboration of employers and the programs' planners. Good working relationships must be established. Of the various conditions that affect linkage, the quality of working relationships may be difficult to establish, however, in training environments that lack a tradition of collaboration. Because accelerated training programs may involve several firms, the working relationships can be complicated.

RELEASED-TIME TRAINING

The released-time approach combines on-the-job training with classroom instruction. Trainees divide their time between working at their jobs and attending classes at training centers. There are several variations of this training alternative, but all share the following characteristics:

- o They combine formal instruction with practical on-the-job instruction;
- o They maintain liaison between trainers and employers;
- o They provide structured training; and
- o They pay trainees for working.

In some programs, employees attend three or four classes per week in addition to working full-time. A released-time training program in Kumasi, Ghana, is organized in three phases. (McLaughlin, 1979, pp. 229-233). The first phase of classroom instruction lasts about three months, after which the apprentices return to full-time work. The second phase starts about nine months later and lasts three months. The third phase, which also lasts three months, occurs in the last year of the apprenticeship.

One of the most successful day-release programs is administered by the Vocational Training Corporation (VTC) in Jordan (Herschbach et al., 1985). The Apprenticeship Training Program (ATP) combines supervised in-plant training with formal instruction, which occurs either at the plant or at one of the separate training centers run by the VTC. After 6 to 10 weeks of preparatory instruction, trainees are placed in jobs. Thereafter, trainees

divide their time between working and attending classes, ideally spending three days at work followed by three days in class.

Quantitative Factors

Neither macro nor micro labor demand data are needed for planning released-time training, because the approach directly addresses employers' needs for specific skills. Individual firms assess their own labor needs and accept trainees into the program accordingly. This training alternative largely avoids the problem of maintaining a training supply-demand imbalance, because training placements theoretically equal job openings, providing a correcting mechanism for program enrollments. This does not, however, eliminate the need to monitor labor market projections.

Qualitative Factors

Costs

Training costs are generally no lower than those of formal instructional programs. They can actually be higher because of the difficulties of achieving economies of scale. The training costs are usually shared by employers, however, so that financial outlays for government-sponsored released-time programs may be less than the costs of ordinary formal programs. Moreover, the machinery and equipment used for on-the-job instruction is usually better than that available to trainees in formal programs. Using existing production equipment for training, limits expenditures. To maintain the quality of instruction conducted away from the

work site, however, planners must make adequate allowances for recurrent expenditures.

Staffing

Capable training officers or job placement coordinators are essential for successful training in large and small firms alike. These individuals must supervise instructors, provide liaison with employers, negotiate agreements, and monitor the progress of trainees.

Members of the permanent instructional staff must have a variety of skills, because they cannot easily be dismissed or shifted to different technical specializations if trainee loads change. One alternative is to maintain a small core of permanent staff and use additional, part-time instructors as necessary. Because the training occurs both on the job and in the classroom, instructors should have strong technical skills and theoretical backgrounds. To get this combination, program may need to hire two kinds of individuals as instructors.

Program Management

Released-time training programs require complex management skills, substantial planning, and coordination. The training officers' supervision of in-plant training must be informed and productive. Because of the training officers' importance to the success of their programs, they must receive special training.

Training officers or job placement coordinators work directly with the in-plant instructors in large firms, making sure that educational goals as well as training objectives are met. Training officers work with both off-site instructors and small firms. The training officers, whose responsibilities encompass tasks similar to those of formal programs, monitor the trainees' progress and help employers address any job problems that arise. In addition, training officers provide employers with advice on particularly difficult technical problems.

Program management at the instructional level varies in quality reflecting the differences in firms. Small firms may have difficulty providing good instruction, because they lack resources, because their equipment is outdated or broken, because the quality of their work products is poor, or because their employees are unable or unwilling to provide good training.

A major strength of released-time training is the availability of qualified instructors for training that is conducted entirely within large firms. There, trainees learn current and relevant skills from individuals who are specialists in their technical fields, although the instructors may need training in pedagogical skills. The formal instruction provided in off-site centers, however, exhibits all the staff problems that hamper formal instructional programs generally.

Training Content

Released-time training addresses both cognitive and psychomotor skills by offering substantial practical experience in the work setting, combined with

formal instruction. Formal off-site instruction should cover general education and theoretical concepts related to the trainees' work. The content of released-time training may be both firm-specific and job-specific. Programs usually use the existing equipment of the individual firms providing the training, although small firms may band together to provide training at a central site.

In Jordan's Apprenticeship Training Program, the formal instruction is divided into equal components of general education; theory related to the skills taught on the job, and practical work. Trainees undergo two years of formal instruction combined with practical on-the-job training followed by one year of work experience. Upon completing their training, trainees take a formal examination. Throughout the 3-year training period, a job-placement coordinator serves as liaison between the trainers and the employers. The VTC sometimes assigns representatives directly to individual large firms.

Because they often must band together to get training for their employees, small firms may have difficulty linking classroom instruction and practical, in-plant training. When classes at a centrally located site are provided for trainees from several employers, collaboration and coordination are necessary to ensure that the technical content is appropriate for the skills being taught and for the employers' needs. Formal training programs, which offer general programs to large numbers of students, have always had difficulty addressing the needs of several employers at once. The small firms that band together to provide released-time training encounter the same types of problems: A skill that is important to one employer may not be important to another; something that occurs at one site may not occur at another.

Although it shares some of the problems of formal programs, released-time training contains many built-in linkages that formal programs do not have. As a result, released-time training may be a superior training alternative for teaching skills that require limited amounts of formal instruction.

Working Relationships

Released-time training provides several incentives, because it is immediately applicable to the trainees' jobs. Although the quality of released-time training varies from one employer to another, the approach generally is effective. Trainees are productive, and they earn while they learn, using the techniques, processes, and machinery of their employers.

Instructors may be rewarded for any teaching they do in addition to performing their regular work, and employers must see results in increased productivity and improved product quality.

Substantial coordination is required in developing and supervising program linkages with numerous employers and in maintaining the highly complex networks that result. Procedural guidelines and policies are necessary to ensure smooth transactions between the various parties involved and between different types of program activities. The degree of credibility and support a released-time training program enjoys depends on close links between the program and the government and other centers of power and decision making.

Jordan's Vocational Training Corporation illustrates particularly well the benefits of establishing close policy and operational links with centers of power and decision making. The support of the government, itself, is of

primary importance. The Jordanian government perceives the VTC as an instrument of economic development. Government leaders have lent direction and cohesion to the overall effort; government support has ensured a high degree of implementation; and enlightened government policy has resulted in cooperation between the public and private sectors.

Also essential are the linkages the VTC has established vertically or horizontally throughout the governmental structure and outward to industry. For example, individuals from groups, agencies, and ministries that have direct stakes in manpower planning and training sit on the VTC's board of directors and participate in the VTC's decision making process. This ensures a smooth flow of information and the formation of coherent policy.

The high degree of cooperation between the VTC and the employers can be at least partly attributed to the fact that the line between the public and private sectors is not sharply drawn. Because the Jordanian government has extensive holdings throughout the industrial sector, an effective VTC services the interests of the government as well as those of the employers and the economy in general.

The VTC maintains a particularly close working relationship with the Ministry of Education (MOE): The VTC initially used the MOE's training facilities; the Apprenticeship Training Program's curriculum is very similar to that of the MOE's Trade Training Centers; graduates of both programs receive the same certificates; and joint program planning occurs. The director general of the VTC is also a member of the board of education, and the presence of a MOE representative on the VTC's board of directors ensures reciprocal representation. Moreover, a permanent committee formulates policy

for both the MOE and the VTC, ensuring coordinated training policies and complementary programs--one program tied directly to employers and the other program offered within the framework of the formal education system. The result is collaboration rather than competition.

Embedded within the organizational structure of the VTC are the elements necessary for establishing such collaboration:

- o the formulation of a definite policy and procedures to guide working relationships;
- o the clear identification of the locus of decision making;
- o the establishment of resource allocations; and
- o the institution of information and resource flows.

The structural characteristics of the organizational relationships, however, are highly complex (Herschbach et al., 1985).

FORMAL PROGRAMS

Formal vocational training programs can take numerous forms, but most exhibit the following characteristics:

- o They provide basic technical and theoretical foundations on which to build training in specific skills;
- o They offer general programs for large numbers of students;
- o They tend to be based on laboratory activities rather than practical work experience; and
- o They tend to lack flexibility.

Two common forms of formal vocational training are core programs and cluster programs.

Core programs. Core programs are based on the idea that there are skills common to a number of related technologies (Schill & Arnold, 1965). A program's designers can group these skills to form a basic instructional core. Skills that are common to fewer technologies can be grouped to form progressively less generic layers all the way out to one addressing skills that are relevant to only one occupation or job (Herschbach, 1983). The result is a program that emphasizes training in the skills that have the greatest common application. Beyond providing entry-level training, core programs establish a foundation for building additional competencies and for addressing numerous job opportunities.

Cluster programs. Programs based on the cluster concept prepare individuals to enter families of occupations rather than specific jobs (Maley, 1975). Cluster programs teach trainees representative skills from several related occupations, providing a broad range of entry-level skills but no depth in individual occupations. To determine which occupational areas should be the focus of instruction, program planners use five criteria:

- o favorable long-term employment outlook;
- o opportunity for entry upon program completion;
- o opportunity for advancement through further training, such as apprenticeship and on-the-job training;
- o commonality of skills and knowledge among individual jobs in the cluster; and
- o capability of implementation in a formal school program.

Quantitative Factors

Reasonable projections about the needs of the labor market are needed for the initial planning of formal programs. It is important to have information

about generic skill requirements of jobs, although less specific data are required for occupation-specific training than for job-specific training. Curricula should be based on current analyses of the tasks particular jobs entail.

Because formal programs usually do not have strong links to employers, there are often significant differences between program output and job openings. Functional labor market reporting systems are generally unavailable, and labor markets are highly unpredictable in the short term, which makes it difficult to adjust training input to the immediate needs of employers. Even if the needs of labor markets could be determined with sufficient reliability for sound planning, formal programs would not be flexible enough to adjust to changing demands for labor, because costly facilities and equipment could not easily be altered or discarded. Indeed, enrollments in classes teaching particular types of skills tend to be based on existing training capabilities, regardless of the needs of labor markets.

For core programs, standard procedures for analyzing tasks are used to identify the skills required in each technology. The skills are then sorted according to the degree to which they relate to different technologies. Because the analysis of tasks includes consulting a representative sample of industries, no additional labor market information is needed.

Core programs provide considerable flexibility for occupational choices. The trainee can delay choosing a specific occupation until after learning core skills, when he or she can narrow the choice to one technology or, with limited training, can shift to another technology. As a result of this

flexibility, core programs largely avoid the negative effects of inaccurate labor market forecasts.

Cluster program planners also use standard procedures to analyze tasks, identify instructional content, and to group jobs into clusters that share common requirements. Reasonably good labor market projections, in the form of gross trends and projections, are necessary for initial planning. Planners also need information about further training opportunities.

Qualitative Factors

Costs

Most government and donor investment in vocational education has been concentrated in formal programs. This is not surprising, because the expansion of educational opportunity has been a primary goal of governmental efforts in developing countries. Responding to public expectations of increased social opportunity and to the need to stimulate economic growth, governments have established vocational programs in concert with the expansion of primary and secondary education in general. Considerable donor assistance has been directed to formal vocational education. In recent years, however, the efficacy of such investment has been questioned.

The problems experienced in formal programs are structural, which means that proprietary programs with characteristics similar to those of formal programs tend to have similar deficiencies.

Formal vocational programs require high initial outlays of capital and

concomitant amounts of funding for recurrent expenditures. To maintain program quality, adequate annual outlays must be made for supplies, materials, maintenance, and any necessary repairs. Sufficient levels of recurrent expenditures are needed to attract and maintain qualified staffs and to support instruction. Donor assistance to a particular developing country should be based on the amount of recurrent expenditures the country can make over time. The recommended minimum ratio of recurrent annual expenditures to capital investment is 1 to 10. Unfortunately, many countries do not have the resources to fund recurrent expenditures, and facilities and equipment deteriorate rapidly as a consequence.

Core programs are relatively economical, because common skills can be taught to large groups of trainees using the same equipment and machinery. Although trainees eventually specialize in one technology, the specialized training includes only a limited number of skills that are not common to other technologies. Specialized training must occur before or upon employment, but the specialized skills can be acquired through on-the-job training or a combination of training alternatives.

The costs of cluster programs differ little from those of other formal programs.

Staffing

The limitations imposed by budgetary restrictions are compounded by deficiencies in human resources. Shortages of qualified, dedicated, and reliable staff are common, and poor instruction may be the most perplexing problem associated with formal vocational education. The quality of a formal

program, however, is directly related to the recruitment, training, and retention of qualified instructors. Instructors must be competent to teach theoretical concepts and must have practical work experience and organizational skills. Instructors' salaries should be reasonably competitive with those of instructors in the private sector, and resources must be adequate to provide instructional support. A teacher-student ratio of approximately 1 to 25 is preferable. The ratio of administrative to instructional staff should be about 1 to 4.

The core approach is best suited to programs that have large enrollments, because small enrollments would require each individual instructor to teach several types of program content. The difficulty of providing good instructors is a major limitation of core programs.

Cluster programs have greater staff requirements than most other types of formal programs, because instructors must be trained to perform several related jobs.

Program Management

Managing a formal vocational education program is complex and demanding, because of the physical resources involved. Administrators of formal programs are concerned with policy, evaluation, and finances. Department heads are responsible for coordination and planning. Important management tasks include ensuring adequate supplies of trained instructors, providing periodic staff development for instructors, and upgrading curricula regularly.

Extensive planning and development is necessary in the initial stages of

designing a core program. Once the program is operating, however, the management tasks are probably no more complex than those associated with other kinds of formal instructional programs.

The instructional management tasks of cluster programs are complicated and require considerable coordination of instruction and attention to a wide range of tools and equipment.

Training Content

Because formal programs tend to address large numbers of students, instruction is often more general than some employers would like. Formal vocational training emphasizes basic generic cognitive skills that are needed to master the skills required for performing traditional jobs. Formal training includes theoretical as well as practical experience but generally does not provide the extensive practice trainees need for mastering psychomotor skills. Formal vocational training, however, enhances the mobility of trainees and is the best source of occupation-specific training to provide entry-level skills.

Despite severe shortcomings, formal vocational training programs are an essential component of manpower development. Wallender (n.d.) suggests, for example, that formal education builds a foundation for additional training that is linked more closely to the needs of specific firms. And Teitel (1984) cites the need for transferring technology, which can be accomplished by preparing individuals who will use and modify technical skills and information in the context of local conditions. Anderson (1982), Westphal, Rhee, and Purcell (1981) and Kaneko (1984) express similar views. Indigenous labor

forces must develop the competency for using new technologies--a competency that is lacking in many non-industrialized societies. Because it is tied to particular production tasks, industrial training is too specific to provide the foundation for technological competency. Providing such a foundation, however, is probably what formal programs do best--if the instruction is good.

Periodic and systematic infusions of new training content are important to regular instruction.

Like core programs, cluster programs provide trainees with broad, basic backgrounds that form the foundation for additional training. The transferable skills taught in cluster programs help to give trainees mobility within occupational areas. Additional, job-specific training is required after completion of cluster programs, however, because they provide only limited ranges of skills for any given job.

Working Relationships

The policies and guidelines of formal vocational programs must support close working links with employers. Trainers and employers must collaborate to identify what characteristics trainees should have in order to meet the employers' needs. To ensure that the training is related to the job requirements, employers, instructors, content specialists, and those who design instruction must communicate regularly with one another.

PRODUCTION CENTERS

The idea of combining instruction with actual production activities is not

new. Recently, however, attention has focused on production centers because of the need for more realistic linkage between training and employment opportunities and the need to address a lack of training resources.

Van Steenwyk (1985) reports on several training programs that fully integrate instruction with the manufacture of products for sale in local markets, using indigenous materials or waste materials and appropriate technology. Trainees carry out all phases of the work, including design and development, production, marketing, sales, and accounting. This approach provides trainees with appropriate experiences for establishing their own small shops or businesses.

Trainees earn as they learn, offsetting the cost of training and making it more affordable. In Honduras, for example, private voluntary organizations have "produced up to \$800 in goods and services per student annually . . . demonstrating the ability of students to finance a significant portion of their training costs while learning a trade" (Van Steenwyk, 1985, p. 6).

The Botswana Brigades are the result of a rural training scheme to generate income, support community development, and provide practical training (U.S. A.I.D., 1984). A local board of trustees controls the small, autonomous training and production units. The training, which focuses on local occupations, is provided to 16- to 18-year-olds who have left primary school. Of every five days, one is spent on academic upgrading and trade theory, and four are spent on practical work. The units' service and production activities offset training costs and include community development activities.

Other examples of the integration of instruction and production can be

found in Jamaica, Peru, Costa Rica, and even the United States and the Soviet Union. Although the successes have been mixed, this training alternative has considerable potential (van Steenwyk, 1985).

The major advantage of production activities is that they use adapted technology and local materials in the manufacture of products that are competitive on the local markets. Trainees thus learn skills that enable them to succeed in the context of both the formal and informal labor markets.

Quantitative Factors

To some extent, production centers avoid the problems associated with the lack of specific information about labor markets. Specific skills are taught, but they are taught in the context of producing complete products, which exposes trainees to the entire process of production. Furthermore, trainees learn a range of skills and acquire considerable versatility. Nonetheless, training must be based on general estimates of the needs of labor markets. The data need little fine tuning, however, to be adequate for use in this training alternative.

Qualitative Factors

Costs

Seed capital, in the form of a revolving funds, is needed to start a production center. Providing the capital as a loan provides greater assurance that the funds will be properly managed than would be the case if the capital were simply donated (van Steenwyk, 1985).

Production centers are not self-supporting, but the money they earn significantly reduces the costs of providing the training. This fact distinguishes production centers from the many training programs that use their budget allocations for staff salaries, leaving little money for supplies, repairs, and maintenance. Because the money generated by production centers is plowed back into their programs, the centers can meet their operating expenses and maintain their equipment. Production centers can also use their "profits" to reduce their training costs to levels approximating those of traditional academic programs (van Steenwyk, 1985, p. 10) or to boost instructor salaries to more competitive levels.

Although training costs are reduced by production profits, production centers should expect to recover no more than 20 to 50 percent of their recurrent costs during a 3-year operating period. Attempting to produce more income diminishes the relevance of the programs (van Steenwyk, 1985).

Staffing

The skills needed for running a production center are similar to those needed for operating a small business. Administrators must be flexible and should have production, budgeting, and accounting skills.

Instructors need a wide range of skills, because production often draws from different technical specialties and involves many different materials. It may be difficult to find instructors who have both broad practical experience and management experience and skills. Although trainees can perform many of the management tasks of production, supervising instructors

have greater responsibilities for management than do instructors in programs that do not involve production.

Management problems can be expected if instructors do not possess good instructional and management skills. Because qualified instructors are not readily available, staff development programs seem to be a prerequisite for implementing this training alternative.

Program Management

The administrative structure must be decentralized and flexible to serve a diverse network of groups. Centers must have the autonomy to respond to changing market demands, and to accommodate needs for equipment and machinery, repairs, maintenance, and materials (van Steenwyk, 1985).

Production centers probably work best if they are run by local volunteer agencies, which have the flexibility to adapt to prevailing circumstances. Such flexibility is difficult to achieve in programs operated by government agencies.

Production management responsibilities are greater at production centers than at other types of training programs. In addition to the everyday management tasks, center employees have two important duties:

- o ensuring that production of items for competitive markets follows orderly and effective systems; and
- o coordinating production activities with on-going instructional programs, so that education does not become secondary to production.

Production units must be fully integrated with instruction in all phases of design, production, marketing, and distribution.

Training Content

Combining theory and practice, production centers teach a wide range of skills.

For organizing instruction, van Steenwyk (1985, pp. 15-20) recommends a modular, competency-based approach, which provides considerable instructional flexibility, affords better instructional management, and makes it easier to integrate instruction and production.

The production activities contain a natural link between the training and the buyers of the products (the surrogate employers). As products are designed, produced, and marketed, the necessary technical skills for each step are identified and can be built into the instruction. This mechanism allows instruction to be adjusted on an on-going basis.

Moreover, instruction is directly tied to its application. In fact, because production centers have more control over the design of instruction and have wider arrays of practical activities to offer trainees, production centers can achieve a more satisfactory combination of theoretical and practical instruction than that achieved by conventional on-the-job training.

Focusing on adapted and appropriate technology enhances the relevance of instruction to local conditions for production (van Steenwyk, 1985).

Working Relationships

Strong day-to-day, routine working relationships must be established between those who run the production center, those who plan the instruction and work, those who market the products, and those who buy the products.

Production centers should not compete with established local businesses. Instead, the centers should produce goods or services not readily available in their communities. In addition to minimizing outside criticism, this approach offers greater potential for opening up new employment opportunities locally (van Steenwyk, 1985).

Close collaboration with the public and private sectors is required to maintain credibility and cooperation and to provide entries to new markets. The public sector often provides good markets: Collaborative efforts bring business to the center while saving money for public institutions. Other potential markets lie in producing goods for marginal sectors of the economy (van Steenwyk, 1985).

To avoid disputes, production centers should establish effective accounting and auditing systems and keep accurate records of production (van Steenwyk, 1985).

Economic incentives should be provided to motivate productivity: Extra efforts should bring extra compensation. Production activities that are not in harmony with educational objectives should be treated as extra, paid activities and should not be conducted during instructional hours.

Instructors, who must supervise all production activities, must be paid for all work they perform, including work beyond their regular teaching duties (van Steenwyk, 1985).

SERVICE CENTERS

Service centers approach training as one of several interventions delivered in coordination rather than as a single intervention designed to address a specific problem.

This training alternative provides an integrated and coordinated approach to addressing employers' needs, including training needs. Service centers provide a full range of services, which may include supplying or locating training in management skills; providing credit and financial services; assisting employers with marketing and distribution; and providing information on technological developments (Hoxeng, 1980, Marsden, 1984; Corvalan-Vasques, 1983).

Although they view training as important, employers generally identify training as less significant than several other factors that limit productivity. In recent studies in Jordan (Herschbach et al., 1985) and Honduras (Cuervo, 1985), for example, employers consistently ranked training below the need for capital, expanded markets, better distribution networks, and advanced technology. Unless these other needs are addressed, the employers do not perceive training as a timely investment.

Phillips (1978) suggests that family businesses and small enterprises are

in particular need of financial and management training. Marsden (1984) argues that very small firms--those employing fewer than 20 workers--have the greatest need for services and have limited knowledge for resources with which to seek help to address the need. Large firms need less help because they "have access to a wide range of services through existing market networks [that] are better qualified technically and more highly motivated than public institutions providing similar services" (p. 248). Marsden's conclusion is that service centers are mainly useful for very small firms and for prospective entrepreneurs.

Applying the service-center concept exclusively to training, Thornton (1984) proposed a Workforce Productivity Center. A technical assistance unit of the center helps employers to assess their training needs and to develop plans for training. A clearinghouse unit maintains a comprehensive, computerized catalogue of training materials. The catalogue includes materials developed within the country as well as materials available from outside sources. A training resource bank maintains a comprehensive list of individuals, firms, and public and private agencies that are available to conduct training within the country. In addition, a revolving loan fund is available to employers for financing training activities.

The Workforce Productivity Center provides employers with information about training resources, with assistance in assessing training needs and coordinating training services, and with obtaining financial aid. The objective is to facilitate training by linking firms with the training services they require.

Quantitative Factors

Local assessments carried out in local firms and plants are the most useful for this training alternative. Service centers do not need data on national and regional labor markets, because the individual firms make their own projections of training needs and services. The firms seek services when they have needs. Centers can help firms determine their needs, but the centers' operation does not depend on this kind of information.

Qualitative Factors

Costs

Resources are a major concern for service centers. Ideally, the centers operate on a cost-recovery basis, but the costs cannot always be recovered. There usually are substantial development and start-up costs, and the center must be supported until it can attract clients. Moreover, client demand must be consistent and sufficient to cover operating costs. There are no service fees to cover operating expenses during periods when business is slack.

Small firms, the group that appears to have the greatest need for services, tend to have very limited resources. Even collectively, small firms may not be a good source of financial support for service centers.

Most service centers need outside support that cannot be recovered from service fees. Consistent, even if modest, support from a donor agency may be needed throughout the life of a service center.

Staffing

Service centers need strong, small staffs of qualified individuals to serve complex client bases. There is a tendency for staffs to grow over time, and for centers to take on the characteristics of bureaucracies. Unless staffs are kept small, eventually the costs of wages and benefits can outweigh the value of the services provided to clients.

Center staff should make referrals rather than provide direct technical assistance that could be provided better elsewhere. The staff's role is to facilitate the identification and use of existing resources by bringing them to the attention of firms that may need to use them. As Marsden (1984) suggests, the center should "improve the transfer of know-how between market participants, rather than attempt to replicate their specialized skills in its own staff" (p. 249). Consequently, staff members need to know what kinds of technical assistance may be needed and where the assistance can be obtained.

In addition, center personnel must have substantial working knowledge about the technical and management processes of client firms, and must be able to distinguish between good and bad assistance. Such versatile and resourceful individuals are hard to find, but they are crucial to the effectiveness of this training alternative. Staff may need significant amounts of on-going training.

Considerable management skills are important for all staff members, because management is the service being provided: The center's main function is coordinating assistance that is provided by others.

Program Management

To succeed, service centers must establish highly effective management systems, because of the diversity of assistance being provided and the variety of employers being served. Centers must coordinate simultaneous assistance in production, marketing, financing, and training to many clients, each of which has a unique mix of labor needs, production technology, products, and market networks.

Institutional connections are important for improving the transfer of know-how between market participants.

Training Content

Clients determine the content of any training provided by service centers. Generally, the service being provided is management, rather than training.

Working Relationships

More than any other training alternative, service centers must directly address their day-to-day working relationships with clients. A center's major task is working full-time with employers and the providers of services.

Flexible guidelines and policies facilitate a center's ability to maintain a complex network of collaborative relationships and effective communication.

Government support is essential for allowing centers to extend their activities to a wide range of public and private groups and individuals.

EXTENSION SERVICES

This training alternative is based on the agricultural extension model, in which assistance is provided to individual farmers at their work places. The purpose and function of extension services are similar to those of service centers, but extension services are more restricted.

McLaughlin (1979, pp. 224-25) reports, for example, that a truck equipped with a complete mobile automotive workshop was used as an instructional center. Making regularly scheduled visits, team members assisted small-scale mechanics with difficult repair problems. The instruction was informal and focused on the problems at hand.

Mobile units that provide more conventional vocational instruction to groups have been used for quite a while. In Thailand, for example, 46 Mobile Trade Training Schools (MTTS) provide training in welding, auto mechanics, electrical wiring and installation, radio repair, and woodwork to out-of-school youths and adults in rural areas. The units were originally planned to rotate among rural villages in 3- to 6-month intervals but have become more or less semi-permanent centers in some of the larger provincial towns (Zymelman, 1978).

Quantitative Factors

Extension services often focus on the needs at hand in geographical areas

that are not normally served by training programs. National data on labor market needs is therefore not as relevant as assessments of local or regional needs.

Qualitative Factors

Costs

Extension services are more costly than those of service centers, and there are limits on how many training sites and employers can be served. As a result, the unit costs of this type of training are high. Recurrent costs are high because of the need to operate vehicles. Maintenance and repairs add to instructional costs, and on-site areas must be provided for instruction and storages.

An external source of funding is probably required, because service fees cannot provide total support.

Staffing

Like service centers, extension services need versatile, highly trained staff.

Program Management

Good management is as essential to extension services as it is to service centers.

Training Content

Physical limitations restrict the scope of instruction provided by extension services. The instruction provided by each unit generally focuses on only one occupational area. Mobile training units tend to offer instruction similar to that offered by formal programs in school buildings, however, so the extension-services training alternative has shortcomings that are similar to those of formal vocational education.

Working Relationships

As with all training alternatives, it is important to develop and maintain good working relationships and to provide incentives for staff and trainees.

COMPETENCY-BASED TRAINING

Competency-based training is not a training alternative but a method of organizing and delivering instruction. The method can be applied to any training alternative to help deliver instruction more effectively.

Although there are numerous differences in the various types of competency-based training, common characteristics include the following:

- o Material for course content is identified by analyzing tasks, using any of several methods of gathering information from incumbent workers. The analysis identifies the tasks to be included in instruction, breaks them down into requirements for knowledge and skills, and describes them in terms of performance conditions and standards. This process clearly delineates the skills that trainees must learn in order to perform successfully in their jobs;

- o Task statements are usually expressed in terms of performance objectives, which explicitly describe the behaviors that trainees must master in order to complete the instruction.
- o Trainees' progress is assessed by using measures that are linked to criteria and that yield information about how well tasks are performed. The trainees are evaluated according to predetermined job standards and must attain minimum levels of competence before progressing to other instructional objectives.
- o Employability profiles and records of training achievement are used to chart trainees' progress through the programs. Staff use instructional media and techniques for individualizing instruction to enhance training and to adapt it to the trainees' varying rates of progress. Differences in the progress of individual trainees are accommodated by a modular instructional format, which is common in competency-based training systems.
- o The instructional program usually works on the open-entry/open-exit principal: When a trainee achieves required competencies, he or she can move on to more advanced training or to the job market. The training programs may have many entry and exit points, reflecting different job and skill levels within occupations.

Quantitative Factors

It is difficult to transfer competency-based instruction from one country, region, or program to another without adaptation. Unless the training is intended to be generic, conducting the initial task analysis in the work environment for which trainees are being prepared is particularly important.

Qualitative Factors

Costs

The costs of setting up and operating a competency-based instructional system can be considerable, especially if mediated materials are used for

instruction. Substantial instructional technology is available in developed and developing countries, but it usually is relatively expensive. Locally produced materials can also be costly, and they are often of poor quality. Furthermore, the costs of training the staff and storing and distributing the materials must be considered. Mediated and print materials have short life spans. The materials become outdated in as little as five years and perhaps unusable after eight.

Although recurrent expenditures are relatively high, the unit cost of instruction can be kept low by achieving high levels of use over extended time periods. Cost savings can also be realized if instructional materials are substituted for costly equipment (Herschbach, 1984, pp. 46-49).

Staffing

The use of competency-based instruction probably requires the retraining of instructional staff. The instructor's traditional roles as dispenser of information must be changed to manager of instruction. A major advantage of competency-based instruction is that it can partly compensate for poorly trained instructors. Trainers can purchase or develop instructional materials that are superior in content and design to the instruction provided by local teachers through traditional practices. Particularly important is the fact that new technical content can be introduced through instructional materials, upgrading the existing training staff as well as trainees. This is especially true in fields undergoing rapid technological changes. The introduction of instructional technology can provide an effective way to combat technological obsolescence.

Program Management

The implementation of competency-based instruction requires that an instructional management system be established. All of the institutional and instructional management tasks associated with traditional instruction are required, along with the need to accommodate the large amount of instructional materials. Moreover, because the system is flexible, it requires staff to do more planning and coordination.

Training Content

A competency-based system is intended to provide instruction efficiently and effectively. Efficiency is achieved by using explicitly stated objectives, mediated instructional materials, a modular format, and performance measurements linked to criteria. This approach allows trainees to meet objectives at rates appropriate to individual learning styles. Effectiveness is achieved by basing instruction on thorough analyses of skills, which implicitly includes tailoring instruction to the specific characteristics of trainees and to the instructional and job settings.

Working Relationships

A major problem encountered by trainers is that of getting access to materials. This is particularly true of small firms and, to a lesser extent, of formal instructional programs. The commercial, trade, and association networks through which information can normally be acquired are not available. A major task of donor assistance, therefore, is establishing and developing better channels for communicating about training resources.

CHAPTER FOUR: FINDINGS AND RECOMMENDATIONS

Findings

This study has uncovered or reconfirmed a number of findings that help clarify the role of vocational training and define its limits. The major findings relate to the function of training in general, employer-based training, and formal training.

The Function of Training

- o Employers think training is important but give less priority to it than to other problems.
- o When hiring employees, employers prefer applicants with formal education, including formal training, to those with other types of education.
- o Existing training resources in developing countries are underutilized.
- o Employers see attitude formation as very important for all training.
- o A developing economy needs a variety of training alternatives to address its needs for varied skills.

Employer-Based Training

- o Employers are willing to pay for profitable and relevant training.
- o Firms conduct a considerable amount of training, usually on-the-job training, to replace or upgrade workers, to improve productivity or quality, and to introduce new equipment and processes.
- o Small and medium-size firms probably have the greatest unmet training needs, because of limited resources and knowledge about training services and small numbers of

employees. Large firms need help assessing needs, upgrading instructors, and adapting materials.

Formal Training

- o Formal programs are poor at providing very specific training but good at providing foundations for specific training.
- o Adequate funding for recurrent expenditures is necessary to prevent deterioration of facilities.
- o Trained instructors are crucial for effective programs.
- o Vocational programs involved complex management tasks.
- o Incentives must be built into program designs to ensure that all parties are motivated to work together.
- o Practical work experience encourages linkage between training programs and employers.

Recommendations

Recommendation 1

Qualitative improvement of vocational instruction should take precedence over program expansion.

Recommendation 2

In funding training projects, capital investments require concomitant funding for recurrent expenditures. An annual minimum of ten percent of the capital investment is recommended. The amount may be higher where sophisticated production equipment is installed or where instructional technology is used extensively.

Recommendation 3

A.I.D. should fund training projects according to:

- o the ability of the host countries to fund recurrent expenditures; and
- o the potential of the projects to generate sufficient income to support recurrent expenditures.

Recommendation 4

Program quality is directly dependent on the quality of the instructional staff. Assistance to skill-training projects should be accompanied by thorough assessments of the availability of qualified staff members and of their ability to successfully conduct training.

Recommendation 5

Staff ratios and instructional support require careful attention. Teacher-student ratios of approximately 1:25 are best, when sufficient resources are available to support instruction.

Recommendation 6

The tendency to create and support training institutions with large administrative staffs must be avoided. The ratio of administrative to instructional staff should be approximately 1:4 to avoid top-heavy administrations.

Recommendation 7

Instructional certification programs are useful for ensuring the quality of staff. Where such programs do not exist, A.I.D. should assist in establishing a consistent set of standards and certification guidelines.

Recommendation 8

Donor assistance to establish or upgrade vocational training programs should be contingent on the full assurance that the required program management capability exists at the institutional, departmental, and instructional levels.

Recommendation 9

A.I.D.-funded training projects should include the use of educational technology whenever appropriate, especially in occupational areas undergoing rapid technological change. Such use infuses the program with new technical content and skills for the upgrading of instructional staff and training workers.

Recommendation 10

A major problem of training programs in lesser developed countries is lack of access and resources to develop good training materials. A significant role for A.I.D. is matching training resource needs with sources of U.S. training technology. By encouraging the development of information networks, A.I.D. can stimulate the local adaptation and production of training materials.

Recommendation 11

The training populations served by vocational education programs in most lesser developed countries are too small to justify investments in instructional development. Whenever possible, A.I.D. should encourage the adaptation of existing materials rather than develop new ones and should regionalize training services to maximize economies of scale.

Recommendation 12

Attitude enhancement is critical to improving productivity. Poor quality of work, lack of initiative, and lack of innovation result more often from inappropriate behaviors than from technical deficiencies. Training programs must aim at improving both the technical competency and the attitudes of workers.

Recommendation 13

Training programs must be evaluated on the basis of the ability of trainees to perform their jobs successfully. Such evaluations require close collaboration with employers.

Recommendation 14

Training assistance to small employers should be organized to serve a number of small firms that have similar training requirements. Assistance should include assessing in-plant training needs, establishing training plans, and locating sources of training content.

Recommendation 15

In providing funding assistance to training projects, donor agencies must insist on instituting collaborative relationships between trainers and employers.

Recommendation 16

A.I.D. must insure that collaborative relationships are identified, objectified, and embedded in every training project design. These relationships require four elements:

- o Policies and guidelines;
- o Identified locuses on decision-making;
- o Structural linkages; and
- o Clear flows of information and resources.

Recommendation 17

The link between training and employment must be strengthened by building dependency relationships into the design of training programs to provide incentives for all parties to work together for mutual benefit.

Recommendation 18

Program designers must promote the value of training services by identifying the specific benefits for employers. Expected training results

must be described in terms of profitability, increased production, quality, and growth.

Recommendation 19

Training design must respond to local contexts and not address only the technical dimensions of problems. Local political, social, and economic centers of power and authority must be considered in determining what is feasible. Strategies for minimizing resistance to change and innovation must be clearly identified at the earliest stages of program design.

Recommendation 20

A.I.D. should encourage the development, coordination, and collaboration of training resources and services to assist the private sector in developing an integrated and coordinated approach to improving productivity, including developing human resources.

Recommendation 21

A.I.D. must develop and identify clear interventions to address the needs of small firms accommodating their small numbers of trainees and modest resources.

Recommendation 22

Accelerated in-plant training programs to upgrade workers have considerable potential for improving the productivity and the quality of work

products in developing countries. These programs are relatively cheap and have low per-unit labor and capital costs.

Recommendation 23

To insure the efficiency and effectiveness of technical training projects, program designers must address the specific training-employment linking conditions with the training interventions selected and must determine the probabilities of achieving those conditions within local contexts, because programs that do not address these critical factors inevitably fail.

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SUMMARY OF JORDAN CASE STUDY

The objectives of the case study examining vocational training programs in Jordan were to develop a greater understanding of the relationship between training and employment, to suggest methods of improving the training, and to find ways of making the training more responsive to employment needs. The methodology used in conducting the study included: comprehensive discussions with representatives of government, business, and labor; interviews with training personnel; field observations at training centers and institutions and at public and private work-sites; and analysis of labor and training data.

Jordan presents many problems for economic planners. The country's economy is rapidly changing, the population is expanding quickly, and the labor force is varied and mobile. There is a mass exodus of skilled labor from Jordan to other countries. At any one time, nearly half of all Jordanian workers are employed abroad, primarily in the oil-producing Gulf region. It is estimated that as many as 8 of every 10 Jordanian workers will be employed outside their homeland during some period of their lives. At the same time, there is an influx of unskilled foreign labor. Workers from Egypt, Pakistan, Syria, and other developing countries come to Jordan to take jobs that Jordanians do not want. Foreign workers make up about one-quarter of the domestic work force.

The Jordanian government does not discourage the migration of large sectors of the labor market. In fact, the country's skilled workers are one of its prize commodities: superior education and technical skills qualify Jordanian workers for high-paying jobs in neighboring countries, and the money

these workers send home provides essential support to Jordan's economy. By exporting labor, Jordan shares in the wealth of the nearby oil-producers, although the country has no petroleum reserves of its own. But this economic linkage to other Arab nations also means that Jordan's economy is greatly influenced by external factors, such as oil prices, the Arab-Israeli conflict, increases in regional demand for industrial products and competition for markets, and the Lebanon and Iran-Iraq wars.

The volatility of the economy and the erratic labor migrations make vocational planning difficult. The government, which attempts to guide the economy through planning and investment, supports the export of Jordanian labor. But because it is impossible to know precisely what skills will be needed in the future, the government makes little attempt to direct students into one field or another, and instead offers skills training without regard to specific employment needs. This approach has led to an excess of professionals in the labor market and to a severe shortage of skilled technicians and managers.

Because of the rapid turnover of labor, it is constantly necessary to train new workers. Few workers remain at the jobs for which they were educated; not only is there the exodus to the oil-producing countries, but every student must serve 2 years in the military immediately upon completion of training. Even persons trained on-the-job with the apprenticeship program leave their positions after receiving their certificates. And the untrained foreign workers who immigrate must be taught to fill the positions of the Jordanian workers who have gone abroad or into military service. Thus, Jordan supports the full cost of training both groups.

Skills training is provided by a number of sources. Formal courses are conducted under the auspices of the Ministry of Education. These courses include 2- and 3-year programs at the secondary level as well as post-secondary vocational programs in community colleges. Closely coordinated with the Ministry of Education's activities are those of the Vocational Training Corporation (VTC), which also collaborates with private employers to provide an apprenticeship program that combines on-the-job training with theoretical instruction. A third source of training is employers, who may provide in-house training to their employees. Various other government or volunteer organizations may also provide some skills training. The two programs rated highest by employers--and the two analyzed most thoroughly in this case study--were the Vocational Training Corporation's apprenticeship program and the Ministry of Education's community college program.

The VTC Apprenticeship Training Program combines supervised on-the-job training with formal instruction. Ideally, this collaboration of educators and employers alternates 3 days of work with 3 days of instruction, although at times the ratio may be as high as 5 days of work for each day of instruction. The apprenticeship lasts for 3 years, and each person who completes it and passes an examination is awarded a certificate of training. (This certificate is the same as that given a graduate of any of the 2-year Trade Training Centers run by the Ministry of Education, although the skills and experiences provided by the programs vary widely.) Graduates of the apprenticeship program go directly into the labor force as skilled or semi-skilled workers; they do not qualify for higher education. The VTC also provides short-term training tailored to the needs of individual employers.

The strengths of the VTC Apprentice Training Program result largely from its cooperative structure and its mixture of formal and on-the-job training. Employers like the VTC apprenticeship program because they participate actively in it and can adapt it to their own needs. The apprentices are a source of inexpensive labor, and they are trained in the particular skills needed by the firms to which they have been assigned. At the same time, the apprentices benefit from the considerable amount of practical experience (which only the VTC program offers). Through the formal instruction, they also learn new techniques and skills that could not be taught by on-the-job training alone.

Among the VTC program's weaknesses are inadequate off-site facilities and curricula. In addition, most of the employers the program currently serves are large; diversification is needed to meet the needs of smaller firms. Finally, the VTC program does not appear to be much better than the government at satisfying national employment needs, because most trainees do not remain at the jobs for which they were trained.

The main purpose of the Ministry of Education's community college program is to prepare mid-level professionals and skilled technicians for employment by the government as well as by the private sector. The program provides post-secondary instruction in 60 different technical specializations, including accounting, electronics, computer science, and teaching. Students do not have to pay tuition, but after graduation they must pay for their training with government service. The graduates receive certificates that allow entry into oil-production jobs abroad. Although they are ineligible for additional higher education in Jordan, some of the graduates enter foreign

universities. The community colleges also offer a number of excellent short-term courses in conjunction with firms, generally to persons who are already employed.

The community college program has a number of strengths. The program provides a broad range of training. Those institutions run by the Ministry of Education are generally well equipped and administered. Because of the requirement for government service, the program offers easy access to permanent employment with the government, especially for women, who otherwise would face traditional employment barriers.

The community colleges' attrition rate is high, however, and only about two-fifths of the entering students complete their courses of study. Other weaknesses include the lack of practical training and an overemphasis on the academic and theoretical. The quality of instruction is uneven, and the subjects offered are seldom matched with the needs of employers, except in the case of the short-term courses offered in conjunction with firms.

Although the problems confronting vocational planners are substantial, some immediate improvements could be made. Training programs that award the same type of training certificates should teach standardized bodies of skills. Jordan's economic planners should also make use of the good available economic data to develop a matching system in which vocational skills training is based on employment information and economic projections.