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Changing Patterns in Vocational Education

John Middleton

Investment in secondary vocational schools has declined in favor of nonformal teaching systems, which take a long time and multiple investments to establish. The shift leaves secondary education in need of new direction.

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Education and Employment

One of the long-standing issues in education development has been productive job training in rapidly changing economies. The argument has been made that vocational secondary schools are not well-equipped for this task — that they often become second-best educational alternatives for young people rejected by the academic mainstream. Although vocational and academic schooling often result in similar levels of education and employment, the higher costs of the vocational schooling make it a less attractive alternative.

In the past 23 years of Bank lending for vocational education and training (VET), there has been a clear shift away from vocational secondary schools toward various forms of training, outside the formal educational system.

Some of the nonformal training programs have been quite successful. Nine characteristics have contributed to the success of three such programs in Korea, Jordan, and Brazil:

1. *Long perspective with multiple investments:* It took 15 years and more to establish each of the three programs and as many as five project investments.

2. *Expanding industrial employment:* Industries in all three countries had a strong demand for skilled workers.

3. *Small formal beginnings and incremental expansion:* The first projects were relatively small and simple. In the middle and later stages the three countries were able to build and expand on their own experience.

4. *Responsive planning:* The training systems were planned in response to, not anticipation of, employment demand.

5. *Early and sustained involvement of enterprises:* Sustained efforts were made to link training with employment by involving employers.

6. *Evolution of policy and management capacity to match system complexity:* As the training systems grew, quasi-autonomous national agencies were created to manage job training.

7. *Increasing attention to alternative financing sources:* Efforts were made to find financing other than government appropriations from general tax revenues.

8. *Investment in quality:* The quality and relevance of teaching and learning was improved.

9. *Flexibility of curriculum and institutional design:* The training institutions that were created could respond easily to changing economic circumstances.

Although investment has been shifting into nonformal training, secondary education is in need of new directions. Diversified secondary schools have not provided that direction, leaving questions about how secondary schools might meet social objectives cost-effectively.

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Changing Patterns in World Bank Investments in Vocational Education and Training: Implications for Secondary Vocational Schools

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A long-standing issue in education development is how the productivity and equity of job training and education can be improved in rapidly changing economies. It has been argued that public vocational schools are not well equipped for this task; that, indeed, they become second-best educational alternatives for young people rejected by the academic mainstream. Evidence also indicates that social rates of return to vocational secondary schools are low in comparison with academic secondary education. While the educational and employment outcomes of academic and vocational schools are often similar, the higher costs of vocational (and vocationalized) schooling often makes it a socially less profitable investment (Psacharopoulos, 1986).

The policy prescriptions based on these arguments have thus emphasized public financing of academic secondary education, and provision of job training by enterprises or through non-formal training

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*The views expressed here are those of the author and should not be attributed to the World Bank or its affiliated organizations.

centers outside the education system (Psacharopolous, 1986). Some authorities have further raised the possibility of a "new educational vision" for the public secondary schools that would expand the experiential content of schooling to better prepare students for adult life (Wilms, 1987).

Is there evidence in the record of World Bank experience to suggest that educational authorities in developing countries, as well as in the World Bank, have moved away from investments in secondary vocational schools? What does the record say about the patterns through which relatively more effective training systems evolve in developing countries? Is there any evidence that a "new educational vision" is emerging for secondary education?

The paper is based mainly on reviews currently underway of World Bank project appraisals and evaluations. These include a comprehensive analysis of the patterns of Bank and Government investments in the 320 World Bank education sector loans and credits from 1963-1986, and a more detailed study of the plans and evaluations for a representative sample of 121 components in 76 projects in 34 countries that supported training for industrial employment. Of particular interest in the project review have been countries where the Bank and the Government have collaborated in the development of national training systems over a relatively long period (10-20 years) through a sequence of investments.1/

Data for the study of projects is limited, particularly in documentation of the employment outcomes and equity effects of training institutions supported.2/ Thus our ability to assess the productivity

of various training modes is constrained. However, the large sample of projects studied and the use of multiple criteria of effectiveness have made it possible to gain some insight into the relative effectiveness of different institutional training modes in varying economic contexts.

A clear and significant shift over the past twenty-three years of Bank lending for vocationally-specific education and training (VET) away from vocational secondary schools towards various forms of non-formal training is found. There is some evidence to suggest, however, that all modes of training have been difficult to establish in low-income countries and, conversely, that all modes can be established in middle income countries. In these latter circumstances, successful investment strategies for the development of training systems share key policy and operational characteristics. Finally, the "new educational vision," at least as represented in investments in diversified secondary curricula, has had a decidedly mixed history.

DEFINITIONS

The field of vocational education and training is beset by definitional problems. In his review of the literature on the cost-effectiveness of training, Dougherty (1988, forthcoming) found that " ... much of controversy in the literature appears to be attributable to antagonists unwittingly focussing on two different points on what is in effect a continuous spectrum and then arguing at cross purposes." To avoid, or at least minimize that problem in the present paper, it is necessary to discuss briefly the definitions that have been used in the analysis of World Bank experience. These

distinguish VET systems along three dimensions: mode of training delivery, sector of intended employment, and the level of the national economy the system is intended to serve.

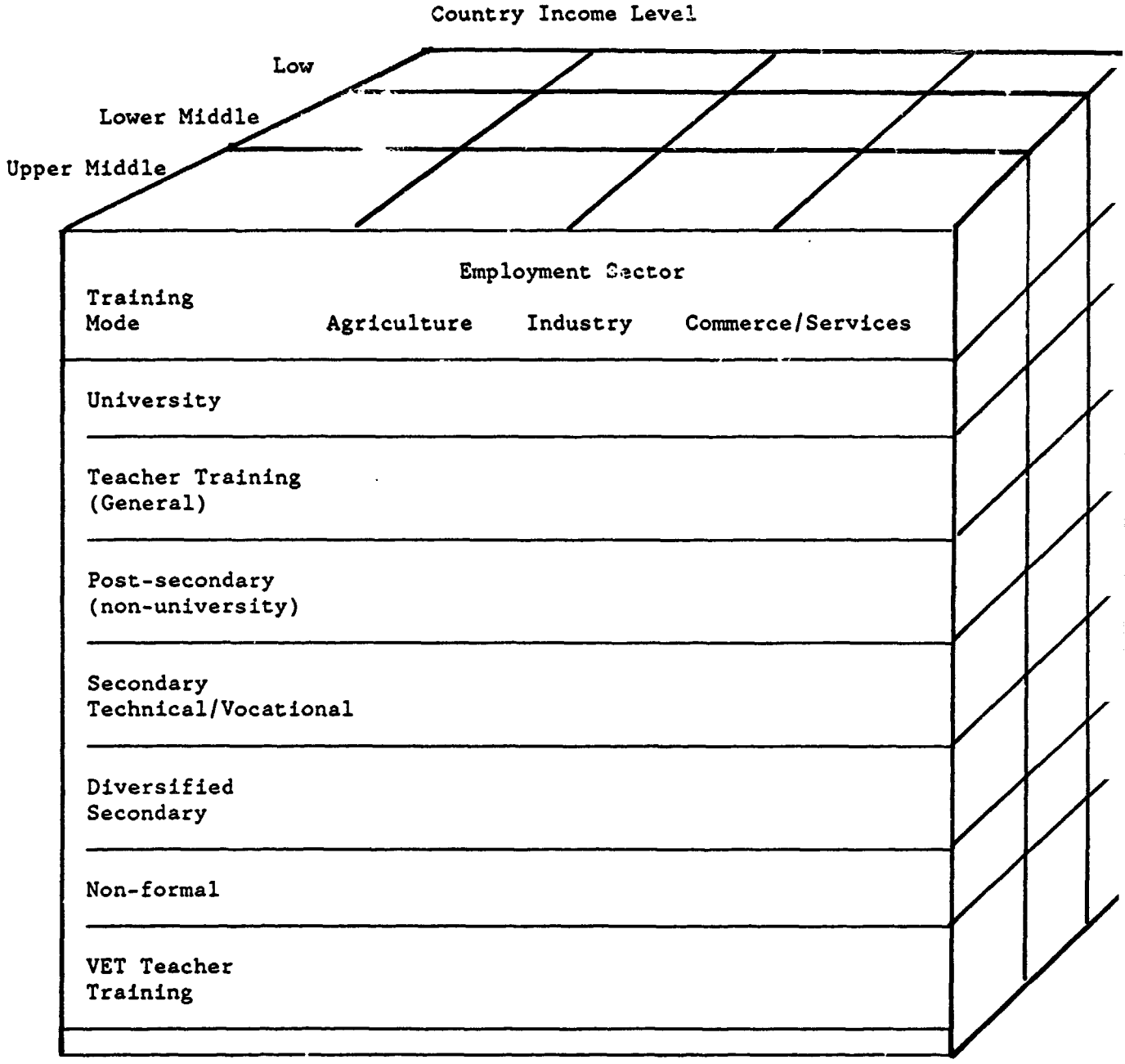
Mode of Training Delivery

The matrix structure on which our studies rest is presented in Figure 1. Seven institutional modes for vocationally-specific education and training are identified: university, teacher training for general education, diversified secondary, post-secondary, secondary and non-formal. Taken together, these modes define the universe of types of vocationally-specific education and training in which the World Bank has invested.*

University VET encompasses courses of study (such as engineering, medicine, pharmacology, and business administration) that prepare individuals for specific occupations. Teacher training for general education also prepares for a specific occupation. Diversified secondary schools incorporate greater or lesser proportions of "practical subjects" in an academic curriculum, with varying degrees of specificity in the degree to which they are oriented towards labor markets.

*In the education sector. Additional investments are made in what is called in the Bank "project-related training." These are training operations incorporated in investments in non-education sectors, such as industry, power, and transportation, as well as investments in health and agriculture training which do not originate in the education sector lending program.

Figure 1: Taxonomy of Vocationally-specific Education and Training



Post-secondary institutions in this taxonomy comprise all types of formal education, requiring graduation from secondary school for entrance, that prepare students for specific occupations but which offer less than a university degree.

Secondary institutions are defined as vocational and technical schools that offer degrees. In the Bank's experience, these have generally been publicly financed and managed by Ministries of Education, although a small number of specialized secondary schools, such as for agriculture, have been managed by other Ministries. It is generally intended that graduates of these institutions will enter the labor market, though in many cases they seek instead to continue formal education. Although the distinction is not always entirely clear, diversified secondary schools (i.e., those which seek to add practical experience to the curriculum but which are not solely designed to provide terminal job training experiences) are not included in this definition.

The term "non-formal" encompasses a range of training institutions outside of the formal education system, including centers and formalized apprenticeship schemes managed most often by Ministries of Labor or public corporations with varying degrees of autonomy, as well as specialized training institutions established within public agencies to serve particular sectors of the economy -- such as construction, transport, and agriculture.

Sector of Employment

The second dimension of the matrix is the sector in which graduates of the different modes are expected to work. These include agriculture, industry and commerce/services. The skills to be taught -- and thus curricula, institutional design, and costs-- vary considerably across these sectors.

Country Income Level

A third dimension has also been important in these analyses. This is the per capita income level of the country in which investments are made. The analysis uses the national per capita income categories as reported by the World Bank in the World Development Report. Income serves as a rough indicator of the nature of the economy that is to be served by training, an extremely important dimension given the crucial place that employment opportunities hold in establishing the external efficiency of training institutions.

Our general review of the pattern of Bank investments in the education sector covers each of these modes and employment sectors, as well as investments in all forms of general education. The review of project experience does not deal with university-level VET, general teacher training or diversified secondary schools, focusing instead on secondary, post-secondary, non-formal and teacher training investments and institutions.

EVIDENCE

Has investment shifted away from secondary institutions?

The answer to this question is yes. Moreover, there are differences in the patterns of change between general education and VET, across different VET modes, and across countries with different per capita income levels.

Table 1 summarizes the pattern of World Bank education sector lending for two time periods: 1963-76, and 1977-86. Lending for general education of all kinds is distinguished from lending for VET. The latter is presented in two categories. The "narrow definition" category covers investments in secondary, post-secondary non-formal and vocational teacher training. This is the subset of modes studied intensively in the project review. The "broad definition" adds university VET, diversified secondary schools and teacher training for general education.

In relative terms, these investments in the past ten years have placed increasing emphasis on general education, with the increase most marked in primary education. This has been in line with World Bank emphasis on poverty alleviation, where expansion and improvement of basic education can play an important role. Proportionally, investments in VET have declined, although they have increased in absolute dollar amounts. Lending for diversified secondary schools declined dramatically, with a corresponding increase in university-level VET. The overall pattern is one of increasing emphasis on university and non-formal VET, with significant declines in secondary vocational and diversified schools.

Table 1: Distribution of Bank-Supported Education Sector Investments, by Education Category (%)

	1963-76	1977-86
General Education	31.4	46.1
Primary Education	(5.9)	(21.9)
Total VET, Broad Definition	61.8	50.8
Secondary	(10.8)	(5.2)
Post-secondary	(8.7)	(6.9)
Non-formal	(10.9)	(13.5)
Teacher Training (VET)	(1.0)	(1.0)
Subtotal, Narrow Definition	(31.4)	(26.6)
Diversified Secondary	(11.7)	(0.8)
University	(7.6)	(17.0)
Teacher Training (general)	(11.1)	(6.3)
Unallocated	6.7	3.1
Total Project Base Costs	100.0	100.0
Total Bank Lending ($US million)	1,580.1	5,868.5

Source: Schwartz (1988, forthcoming)

Patterns for lending in support of VET, in the narrow definition are shown in Table 2. A number of significant shifts may be observed. On a sectoral basis, emphasis has shifted away from education and training for agriculture (from 25.1% to 12.7%) towards industry (from 67.9% to 80.4%). Investments in VET for commerce and services has remained constant at about seven percent. Within the industry sector, moreover, there is a notable shift from secondary institutions towards non-formal, with marginal changes in the proportions of investment targeted towards post-secondary and teacher training.

Table 2: Distribution of Bank-Supported VET Investments By Sector and Mode (%)

	1963-76	1977-86
SECTOR		
Agriculture	25.1	12.7
Commerce/Services	7.0	6.9
Industry	67.9	80.4
o Secondary	(18.6)	(13.3)
o Post-secondary	(20.9)	(22.7)
o Non-formal	(25.8)	(40.8)
o Teacher Training (VET)	(2.6)	(3.6)
MODE (all sectors)		
Secondary	34.4	19.5
Post-secondary	27.5	22.7
Non-formal	34.9	50.5
Teacher Training (VET)	3.2	4.0
TOTAL (%)	100.0	100.0
TOTAL BANK LENDING ($US million)	712.2	3,126.7

Source: Schwartz (1988, forthcoming)

Thus there is indeed evidence that Governments and the Bank have, in the broad swing of time, invested proportionally less in secondary vocational education and training and more in non-formal modes and in university-level training.

Have these patterns been the same for countries of differing income levels? Table 3 shows the overall distribution of education sector lending between general and VET for two time periods for

developing countries with different per capita income levels: low (less than $400); lower-middle ($401 - $1,635); and upper middle (more than $1,635).

Table 3: Overall Distribution of Bank-Supported Education Sector Investments, By Income Level

	Income Level		
	Low	Lower Middle	Upper Middle
1963-76			
General	30.4	36.7	26.0
Total VET	59.4	56.2	69.1
(Narrow Definition)	(24.1)	(22.6)	(44.1)
1977-86			
General	41.6	39.0	25.8
Total VET	51.5	56.5	72.5
(Narrow Definition)	(35.0)	(37.0)	(41.8)

Source: Schwartz (1988, forthcoming)
Notes: Total percentages for each income level do not add to 100 because of unallocable investment expenditures.

As shown in Table 3, investment in general education has assumed greater importance in low-income countries, with an decreasing share of lending supporting all forms of VET. In lower middle-income countries the proportional distribution of lending has remained the same, as has the high proportion of lending supporting all VET in upper middle-income countries. This trend is, again, consistent with Bank emphasis on basic education as part of poverty alleviation programs.

It also suggests that VET investments may appear more attractive in stronger (usually more industrialized) economies.

In low and lower-middle income countries, investments in narrow definition modes increased at the expense of investments in the additional modes included in the broad definition. In low income countries, this was accompanied by a drop in investments in university-level VET from 15% to 4% of the lending program; in lower-middle income countries, investments in diversified secondary schools dropped from 18% to 2%. (Schwartz, 1988 forthcoming).

Are there any differences, by mode, within VET? As shown in Table 4, investments in secondary institutions have declined in countries at all income levels. However, this decline is relatively lower in Sub-Saharan Africa. Investments in non-formal modes have risen proportionally in low and upper-middle income countries, and have remained relatively constant in lower-middle income countries. In these latter countries, the decline in secondary investments is more than matched by an increase in post-secondary institutions.

Table 4: Bank-supported VET Investments, By Component and Income Level*

	Income Level				
	Low		Lower Middle	Upper Middle	All Countries
	Total	(Sub-Saharan Africa)			
Secondary					
1963-76	35.0	(38.9)	39.3	32.9	34.4
1977-86	17.3	(28.1)	27.5	12.4	19.5
Post-secondary					
1963-76	17.9	(16.1)	10.6	36.7	27.5
1977-86	15.3	(14.2)	26.0	29.9	26.0
Non-formal					
1963-76	42.2	(40.4)	46.1	27.8	34.9
1977-86	57.4	(39.4)	43.2	55.2	50.5
Teacher Training					
1963-76	4.9	(4.5)	4.0	2.6	3.2
1977-86	9.9	(18.3)	3.3	2.5	4.0

* In percentage of Total VET investments (narrow definition) in each Income category.

Source: Schwartz (1988, forthcoming)

Thus the broad pattern of declining proportional investments in secondary institutions, and a corresponding rise in non-formal systems, is differentiated by the income level of the country.

What factors have led to changing investment emphases between general education and VET, and between secondary, post-secondary and non-formal modes of training? Our review of industry VET projects, while not conclusive, offers several interesting hypotheses. Depressed economic conditions, particularly in low income countries, contributed to low productivity of training institutions.

Both secondary vocational schools and non-formal training institutions were designed for pre-employment training for entry-level jobs (though many non-formal institutions had additional in-service training objectives). In industry, intended employment was largely in the modern sector. Economic recession in 1977-86 led to constraints on employment opportunities and on education budgets. Institutions of both types thus faced tight labor markets with reduced resources. Many secondary schools operated by Ministries of Education found it difficult to adjust to these changes. Linkages with employers were almost universally weak. Degree requirements and other regulations -- as well as "education" traditions -- made it difficult for such institutions to develop the flexibility needed.

In these circumstances, the ability of non-formal training institutions in middle income countries (and potentially in low income countries) to establish linkages with employers and to adjust more quickly and flexibly to labor market changes was recognized in investment plans. Also taken into account in investment design for VET was the potential of non-formal institutions to provide a range of training services to employers, including in-service upgrading courses, training design and trainer training for enterprise-based training operations. The record remains incomplete on many of these later investments, and it is difficult to judge their success.

In Sub-Saharan Africa, investments in non-formal institutions remained proportionally the same, while the decline in secondary investments was matched by a rise in teacher training. During this period these countries faced especially difficult economic

circumstances. Institutional capacity was low. Many of the secondary investments were relatively small and simple. Typically coming early in the investment program, these offered opportunities to begin expanding and strengthening vocational training with known institutional modes under the familiar leadership of the Education Ministry. In contrast, the non-formal investments typically established new institutional forms with relatively more (and more complex) objectives. Nearly all of these projects encountered serious implementation problems, but the secondary investments tended to perform better in terms of cost and time overruns.

Thus, during this period, there appears to have been a tendency to maintain investment programs in secondary VET at a somewhat lower level and the later (more complex) non-formal investments at the same level principally for implementation reasons. The significant increase in teacher training investments was clearly (and perhaps belatedly) a response to continuing problems of high-cost expatriate teachers in many countries.

The increased emphasis on post-secondary institutions in lower middle income countries cannot, from our data, be satisfactorily explained. An hypothesis is that, as these economies grew, demand for higher-level technicians grew as well, with the level of training blending with social demand for post-secondary education to suggest this institutional mode of delivery.

The substantial proportional growth in non-formal investments in upper middle income countries, however, has been accompanied by a discernable pattern of institutional evolution which has implications

for the productivity of training investments. This pattern will be discussed in the next section of the paper.

What does the record suggest about the patterns through which relatively more effectve training systems evolve in developing countries?

As noted earlier, empirical evidence on the labor market outcomes of training institutions supported by World Bank projects is largely lacking in evaluation reports. Thus, with the data available, it is impossible to be precise regarding the relative productivity of a given training mode.

Component Performance

However, we do have data on two related criteria. The first (Table 5) is the proportion of enrollment targets achieved at project completion. These figures, of course, do not capture the eventual enrollment performance of project institutions, many of which suffered from significant delays in project implementation. But they can be taken as an indicator of the relative difficulty encountered in establishing training institutions in given modes.

On this criterion, the implementation difficulties faced by low-income countries are clear. The data tend to confirm common knowledge regarding the relationship between overall economic strength and 'mplementation capacity. They also provide some confirmation of the hypothesis that secondary vocational schools are, on the whole easier to establish (or rehabilitate) than the more complex non-formal modes in countries at all income levels, and especially so in low income countries with the weakest implementation capacity.

Table 5: Proportions of Enrollment Targets Achieved, By Mode and Income Level, Completed Industry VET Projects, 1963-86

	Mode				
Income Level	Secondary	Non-formal	Post-Secondary	VET Teacher Training	TOTAL
Low	.19	-0-	.64	1.05	.41
Lower-Mid	.93	.86	1.16	.88	.90
Upper-Mid	1.16	.99	.83	.43	1.09
Weighted Means	1.08	.90	.91	.74	1.00

These conclusions receive some support from data on the second criterion, overall ratings of implementation performance for components in different modes (Table 6). These ratings, which are averages of the subjective judgments made by different evaluators must be used with considerable caution, but may be considered indicative.

Table 6: Average Component Performance, 1963-80
By Mode and Income Level, Completed Projects

Income Level	Mode: Secondary	Non-formal	Post-Secondary	VET Teacher Training	OVERALL AVERAGES
Low	2.0	1.5	2.0	1.3	1.7
Low-Mid	2.2	2.2	2.2	2.5	2.2
Upper-Mid	2.6	2.7	2.3	2.5	2.5
Overall Averages	2.2	2.2	2.2	2.0	2.2

The relationship between level of income and overall implementation performance is confirmed by these ratings. Overall, implementation performance was rated the same for three modes, with teacher training lagging slightly.

Patterns of Systems Evolution

Given these data on performance, one would expect to find case examples of productive VET systems among the middle income countries. In our review of VET investments in twenty-two middle income countries three stood out for the development of effective industrial training systems: Brazil, Jordan and Korea. These systems include formal secondary and post-secondary institutions as well as non-formal systems. The latter combine classroom instruction with formal apprenticeships, and are managed by SENAI (the National Service for Industrial Apprenticeship) in Brazil, the Vocational

Training Corporation of Jordan, and the National Vocational Training Management Agency in Korea. In most simple terms, each system is built on a combination of formal vocational education and non-formal training.

In each of these countries the formal and non-formal training systems that evolved can be considered productive* on a number of counts. Job placement after graduation is high. Internal efficiency, as measured by drop out, repetition and graduation rates is also high by comparison with other countries. Employers report satisfaction with graduates. Private and social rates of return to investments in non-formal training in Brazil range from 10% to 120% (Kugler and Reyes, 1978). In Korea, scores on national skills tests for graduates of three year vocational secondary school programs and of one year vocational training center programs are identical; estimates of social rates of return favor the vocational training institutes slightly (Lee, 1985), and are equal to or exceed social rates of return to general secondary education (See Psacharopoulos, 1987). Employment rates are high, with the secondary schools providing a larger share of industrial workers than vocational training institutes (Lee, 1985).

Importantly, the systems have demonstrated considerable capacity to evolve to meet changing economic and social conditions. Evaluation reports, and interviews with professionals knowledgeable about these systems, describe them as effective and dynamic.

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* There is little information about the equity effects of these systems in our review. Thus this crucially important issue will not be addressed here.

This is not to say that these systems have solved all problems, or are perfectly productive, but rather that they appear to be examples of "good practice" in developing countries. Thus they merit examination in terms of the common characteristics which appear to have contributed to current success. Nine of these emerge from our review.

1. Long Time Perspective With Multiple Investments: In a extensive review of the literature, Dougherty (1988) notes the long maturation period required for effective training systems. In Jordan, this has taken 15 years with 5 project investments (and is still ongoing); in Korea it took 5 projects over 18 years; in Brazil 3 projects over 16 years.

During these periods investments were made in all modes, providing a broad context in which the system could evolve. Importantly, sustained commitment to systems development over a long period permitted learning and adjustment in the process of developing institutional capacity.

2. Expanding Industrial Employment: Although the circumstances varied, all three countries exhibit strong demand for skilled workers in the industrial sector during the period. While Korea and, most notably, Brazil suffered recessions, jobs for graduates continued to be available. In Jordan, first the exodus and then the return of skilled labor from foreign employment caused labor market imbalances to which both the training and employment systems had to adjust. Despite these

difficulties, employment prospects for Trades Training Center (TTC) graduates remained strong.

Hence the training institutions in these countries could count on strong feedback from employers seeking workers, and increasingly strong and sophisticated employer participation in decisions on training curricula and enrollments.

3. Small Formal Beginnings, Incremental Expansion: The first projects in these countries were relatively small and simple, and emphasized formal vocational education institutions. In Jordan, investments began with a combined polytechnic/trades training center, turned toward support of various secondary and post-secondary institutions, and took up the non-formal system in later projects. Korea began with extensions and rehabilitation for 9 existing secondary vocational schools and four junior colleges. Bank support for the development of the network of non-formal centers began six years later. Brazil began with secondary and post-secondary institutions, moving to support for SENAI five years later (although SENAI had been in existence for more than thirty years).

In all countries the formal systems have been relatively successful as well, and, as will be discussed below, became increasingly differentiated in function and governance from the non-formal system.

In the middle and later stages of systems development all three countries invested in larger numbers of institutions, more modes, and the development of policy and management capacity.

In sum, the record suggests that by beginning with relatively small investments in formal institutions, and gradually increasing the complexity of development in terms of variety of modes supported and building management and policy bases, these countries were able to build incrementally from experience.

4. Responsive Planning: In general, these systems were planned in response to -- not in anticipation of -- employment demand. In early stages, manpower data and manpower forecasting capacity were largely absent. Investments were justified on the basis of demonstrated industrial expansion. The development of strong institutional linkages between training and employment to facilitate incremental and localized planning and adjustment were, in retrospect, important alternatives to formalized manpower forecasting. In this context, the location of training institutions became an important variable. In Korea sites were chosen to be close to expanding enterprises; in Brazil, mobile training units were created to take training to the trainees.

5. Early and Sustained Involvement of Enterprises: In all three countries sustained efforts were made to establish linkages between training and employment for all modes (in Brazil, these linkages had been part of the SENAI tradition since the 1940s). Enterprises played active roles in curriculum and enrollment decisions and in the design and provision of on-the-job training experience and apprenticeships. What may be most important is the consistency of commitment in training

agencies to the importance of these linkages. Combined with expanding employment and increasingly effective enterprise management, this helped create a supportive "ethos" in which the needs of employers were taken seriously and reflected in training plans and curricula.

In later stages, the non-formal systems began to branch out to provide a range of training services to enterprises. In Jordan, this has taken the form of training centers established with the assistance of the Vocational Training Corporation in large enterprises, and in assisting groups of small enterprises to jointly sponsor apprentices for VTC training. In Korea and Brazil the non-formal training agencies have as a matter of policy sought to help enterprises develop their own training capacity.

6. Evolution of Policy and Management Capacity to Match System Complexity: Each country began with relatively strong management capacity in Ministries of Education, but relatively undeveloped policy bases for VET. As the systems expanded, quasi-autonomous national non-formal training agencies were created to manage job training, with formal vocational education left with Ministries of Education. Policies in the form of legislation (Korea, Brazil) or development plans (Jordan) came in the middle stages of development, thus benefitting from accumulated experience.

National testing and certification systems received attention early in the investment program. These were important in providing feedback policy makers and managers on the quality of training. In Korea they enabled the government to implement incentive schemes to

attract good students to vocational tracks, most notably exemption from military service for graduates of vocational schools and training centers who scored above a criterion on the skill examination.

Finally, all systems were characterized by gradual decentralization of authority for curriculum decisions and revenue generation to training institutions. In Brazil, SENAI was decentralized to the State level. In Korea, the vocational training centers (VTCs) were planned to become quasi-autonomous public corporations, with governing boards that included employers, with a base of government funding, and a mandate to raise and use additional revenues from the sale of training services. The extent to which this reform was implemented is as yet unclear.

7. Increasing Attention to Alternative Financing Sources: In all countries sources of financing other than government appropriations from general tax revenues were developed as the systems evolved. In Korea and Brazil payroll taxes were introduced as a major source of financing for vocational training. In Korea, in addition, student tuition was charged (accompanied by a scholarship program for disadvantaged students); user fees are also charged in Jordan. In the later stages of systems development Korea provided substantial subsidized loan support for the expansion and quality improvement of private technical junior colleges and university engineering departments.

These innovations diversified and, in some measure, stabilized the resources available to the training system.

8. Investment in Quality: The development of testing and certification systems, and of strong linkages between training and employment, contributed substantially to the ability of all modes to improve the quality and relevance of teaching and learning.

In addition, each country created incentives designed to attract and retain good quality instructors, most notably for the non-formal institutions. In Korea these included scholarships for teacher training with bonded periods of service, free housing and exemption from military service. Jordan provided scholarships (with bonded service) and salary incentives. In Brazil, scholarships were provided, along with salaries set to be competitive with private industry. While these measures did not entirely prevent loss of technical teachers to enterprises, they did enable each country to be comparatively successful in overcoming a barrier to quality endemic in other developing country contexts.

Similar incentives were offered to attract good students, another crucial input to the quality equation. In Korea a "flagship" training institution was created to add further status to blue collar work.

Systems in all three countries have benefitted from comparatively well developed general education systems. Universal primary enrollment has been achieved. The percentages in the age group enrolled in secondary education are 89% for Korea, 78% for Jordan and 45% for Brazil. Only in Brazil does the secondary enrollment ratio fall below the average for the country income group.

All three systems developed permanent curriculum development capacity that was integrated with teacher training and other support services. Occupational analysis was the basis for curriculum development and modification.

9. Flexibility of Curriculum and Institutional Design: Taken together, these characteristics led to institutions that were, in comparison with those in many other countries, able to respond with considerable flexibility to changing economic circumstances. All three countries adjusted to strong social demand for training. Jordan allowed non-formal training centers to evolve towards secondary school status; Korea rapidly expanded enrollments despite overcrowding; and Brazil created mobile units to take training to dispersed populations.

Each also undertook major changes with respect to curricula. Korea converted two junior colleges into "open colleges" with unrestricted enrollment and flexible schedules, to serve in-service workers. Conscious efforts were made to adjust training curricula to changes in the technology of production, with significant employer participation. Jordan adjusted the system to deal with fluctuations in external labor markets, and established training centers in enterprises. In Brazil, curriculum development has been decentralized to the State level to improve the fit with local needs, and educational technology has been relatively widely used.

The capacity of the training system to make these adjustments has been a major factor distinguishing these three countries from many others. This capacity, of course, is crucial to institutional

effectiveness in changing economies. It seems reasonable to think, moreover, that it has been achieved through the combined influence of the other eight characteristics.

It is important not to over generalize from this kind of analysis. Nevertheless, it does illustrate how these developing countries have developed training systems that have the characteristics necessary to adjust to changing economies. Significantly, these systems involve a variety of training modes, including secondary vocational schools that are often comparatively successful.

Does this negate the proposition that such institutions are not well equipped for job training? The answer quite probably lies in the fact that many of these secondary schools have acquired characteristics -- such as linkages with enterprises, incentives to attract and retain qualified instructors and students, good "feedback" systems -- which are most often thought characteristic of non-formal modes. They exhibit, in short, what Dougherty (1988) has identified in his review of the literature as the "convergence of modes." Thus they may no longer be "public vocational secondary schools" in the stereo-typical sense, but rather be evolving towards a new institutional form. Further investigation into this hypothesis, of course, is needed -- particularly to see the extent to which these institutions have been freed of the more constricting features of traditional secondary education.

The implications of this hypothesis, should it hold, are significant for the many developing countries where secondary vocational institutions represent an important existing investment in job training, but have yet to attain a reasonable level of effectiveness.

Is there any evidence that a "new educational vision" is emerging for secondary education?

The answer is that it has emerged, been found wanting (at least in the experience of the World Bank), and has receded. The "new vision," of course, has been manifest in developing countries in the form of diversified secondary schools. These schools have been designed to integrate varying proportions of practical subjects into secondary school curricula. In some instances these were conceived as enriching an otherwise academic curriculum, without specific occupational aims; in others a greater proportion of practical subjects and related work experience were intended to prepare students for the labor market. As of 1979 the World Bank had invested in 79 projects that supported such schools to some extent in more than 25 countries (Haddad and Conly, 1987). As noted earlier, these investments constituted a significant share of World Bank lending for education in the 1963-76 period (11.7%), and practically disappeared from the lending program in the period from 1977 onwards (0.8%). Many of these schools, of course, continue to exist.

What happened? Most simply put, a considerable body of research demonstrated that such schools were not cost-effective

(Psacharopolous, 1985; 1986; Lauglo, 1985). The criteria of effectiveness of primary importance in these studies were labor market outcomes -- employment rates, earnings and social rates of return. While academic outcomes were, in many cases, comparable with academic secondary schools, higher costs lowered returns. For countries with severely constrained resources for education, investments in diversified schools clearly represented trade-offs with the creation of more places in lower-cost academic secondary schools. Implementation difficulties associated with diversified schools further lessened their attractiveness (Lauglo, 1985).

Supporters of the diversification concept have asserted that these schools were evaluated on the wrong criterion: that they should not be intended to prepare students directly for work, but rather to contribute to social objectives such as broad and stronger social familiarity with crafts and technology, or more favorable attitudes toward manual labor or blue collar work. Indeed, in Thailand, the diversification of much of the national secondary system has proceeded on this rationale, and there is evidence that it has succeeded in turning a greater proportion of secondary graduates towards technical streams in tertiary education.

At the same time, in his review of 20 completed World Bank investments in diversified schools, Haddad (1987) found of the 66 objectives stated for these investments, only 2 related to social goals. Thus a major part of the World Bank lending program was not justified in these terms.

To argue that diversified curricula, or some similar version of the "new vision" might best be evaluated in terms other than employment outcomes, however, is not sufficient grounds to move forward -- if indeed that is desirable. Two issues remain to be addressed.

The first is that of achievable objectives. There is little evidence that diversified schooling alone (as it has been put into practice) can achieve the kinds of non-employment objectives that have been put forward. Broad improvements in knowledge of craft and technology may be desirable, and possibly attainable through changes in the secondary curriculum. But it is not yet clear what those changes are, and how the effects may be presumed to take place. The impact of the school on social attitudes towards work is perhaps less plausible, given the powerful influence of family and community (not to speak of labor markets) on the perceived value of blue collar employment.

The second is that of costs. As Lauglo (1985) has shown for Kenya, to approach diversification through well-equipped workshops in the common crafts (woodworking, metalworking, electricity, power) is costly indeed. Clearly this curriculum model, for the poorer countries at least, is unlikely to be widely affordable even when, as Lauglo also shows, the craft courses attain equal status footing with academic subjects.

Thus a considerable challenge remains. If the social objectives associated with diversified education are considered of priority in a given society, ways must be found to address these goals with curricula that can be demonstrated to work, and which can be implemented at low cost.

CONCLUSIONS

Given the caveats regarding the data on which this paper is based, a number of conclusions from World Bank experience relating to the issue of increased productivity of job training, and the propositions regarding the role of public secondary vocational schools and a new vision for education, can be drawn.

First, the shift away from investments in secondary vocational schools towards non-formal training (and university level training) is clear, as is the increasing emphasis in middle income countries on non-formal training systems. Thus it is reasonable to conclude that, over the past decade, the World Bank and its Borrowers have begun to move away from the secondary mode, at least in terms of new investment.

At the same time, there is some evidence, at least, that in strong economies with continuing demand for skilled workers in the modern sector, a variety of training modes can be effective -- including secondary institutions. In such circumstances, however, these institutions appear to take on a number of the characteristics associated with non-formal modes, becoming less like the traditional secondary school. Those developing countries with a considerable existing investment in secondary vocational schools may thus find, in the experience of other countries, directions for reform and rehabilitation. Such efforts, of course, must be fundamentally grounded in the labor market realities they confront. In many

countries, this means attention to informal sector employment -- and here we need to learn a great deal more about possible effective training strategies.

Second, our review confirms findings from the literature that the evolution and development of an effective training system is a process of decades, not years. The characteristics identified for Brazil, Jordan and Korea may begin to indicate some of the elements that such evolutions should include. It is important, however, to note once again the multiple positive effects of strong economies and labor markets, both in creating demand for skilled workers and in building institutional capacity in training and employing institutions. Incremental planning and adjustment through institutional linkages, for example, requires a level of managerial capacity not often present in the poorer countries. Thus this pattern of development may not be universally applicable, except in the longer term.

Finally, while a new educational vision for the secondary school may be desirable, experience to date with diversified secondary schools indicates that this model is probably not a viable approach. This leaves us with some significant questions about how secondary schools might, in a cost-effective manner, address important social objectives.

NOTES

1/ The sample of projects was drawn to be representative of components in Bank projects across regions, countries of different income levels, and modes of training. It includes projects that represent somewhat more than half of Bank lending for these purposes. The studies currently nearing completion are:

Antoine Schwartz. Profile of World Bank Lending for Vocationally-Specific Education and Training. World Bank, Population and Human Resources Department, forthcoming (1988).

John Middleton and Terry Demsky. Review of World Bank Investments in Vocationally-Specific Education and Training for Industry. World Bank, Population and Human Resources Department, forthcoming (1988).

J. Price Gittinger. Review of World Bank Investments in Vocationally-Specific Education and Training for Agriculture. World Bank, Population and Human Resources Department, forthcoming (1988).

2/ The evaluations of World Bank projects are conducted shortly after project completion. In the large majority of cases, this is too soon for data on employment outcomes to have been collected; indeed, institutions supported by the projects have often been in operation for too short a time to assess other indicators, such as graduation rates.

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