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AUTHOR	Loose, Gert
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ABSTRACT

Human ecology and indispensable components of a quality system in vocational education are two operational frameworks that could help to facilitate cross-national cooperation in vocational education. As the exhaustion of natural resources is recognized as resulting partly from the dysfunctional behavior of people, human ecology becomes a necessary frame of reference for the development of vocational education programs. Implications of human ecological research will be used to indicate tolerance levels for environmental strain on people. The aim in curriculum development for vocational education should be to give priority to an extensive common prevocational curriculum preceding specialized skill training to lessen school stress. Another traditional issue that needs reconsideration in human ecological terms is general human development versus work force utilization. The second framework for cross-national cooperation in vocational education calls for definition of components that constitute a quality system in vocational education in different countries. These components are emphases on (1) non-job-specific interpersonal skills and skills related to coping in the work environment, (2) the integration of general and vocational education, (3) basic skills, (4) sequencing curricula for lifelong vocational learning, and (5) the formation of compound systems for in=school and out-of-school learning resources. (Questions and answers are appended.) (YLB)

Occasional Paper No. 87

TOWARDS A CROSS-NATIONAL MODEL FOR COOPERATION IN VOCATIONAL EDUCATION: IMPLICATIONS FOR RESEARCH AND DEVELOPENT

by
Gert Loose
The University of Hamburg
The Federal Republic of Germany

The National Center for Research in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

FOREWORD

As vocational education's role becomes increasingly important both nationally and internationally, it is essential that extensive comparisons between systems around the world be studied. Dr. Gert Loose from the University of Hamburg, Federal Republic of Germany, is examining structural aspects of vocational education programs in different countries to derive from them recommendations for building a model for cross-national cooperation in the field.

Born and raised in Hamburg, West Germany, Dr. Loose began his career as an apprentice automobile mechanic and was later certified as a vocational teacher. He received a master's degree in educational policy studies from the University of Wisconsin, Madison, and his doctorate from the University of Hamburg. He has been on the faculty at the University of Hamburg since 1973, and currently is Chairman of the Department of Comparative Education. He was in charge of a research project on the "Implementation of Out-of-School Learning Environments" in the United States in 1976-77. Since 1978 he has coordinated the UNESCO Institute for Education's Project, "Analysis of In-School and Out-of-School Curricula for Lifelong Vocational Development," involving seven countries. He is also a member of the "Practical Skills" planning group of the International Association for Educational Achievement.

On behalf of the National Center for Research in Vocational Education, The Ohio State University, it is indeed a pleasure to present Dr. Gert Loose's paper entitled, "Towards a Cross-National Model for Cooperation in Vocational Education: Implications for Research and Development."

Robert E. Taylor
Executive Director
The National Center for Research
in Vocational Education

TOWARDS A CROSS-NATIONAL MODEL FOR COOPERATION IN VOCATIONAL EDUCATION: IMPLICATIONS FOR RESEARCH AND DEVELOPMENT

Introduction

In its "Recommendations Concerning Technical and Vocational Education," UNESCO suggests that priority should be given to *international cooperation* in the field. I consider this an important recommendation, and could hardly think of a more appropriate place to have a closer look at the preconditions necessary for this cooperation to be successful, than at the world's largest center for research and development in vocational education.

How effective international (or in operational terms, cross-national) cooperation in vocational education can be for reform in this field is witnessed in the development of your own American system of prevocational and vocational education. Manual arts and manual training as the forerunners of industrial arts education in the United States were, to quite an extent, shaped after the Swedish model of *sloyd* and the British approach of the Arts and Crafts Movement. The creation of the present system of vocational shops in the American comprehensive high school was partly inspired by the Russian experience with the Moscow Imperial School. Finally, the developmental approach to vocational guidance in the United States has received strong impulses from basic German research in psychology. In turn, the American comprehensive high school—with its mode of integrating general and vocational education—has become a model for many countries around the world.

For well-planned implementation, such cross-national cooperation in vocational education needs a sound base in order to avoid the risk of adopting inappropriate foreign structures and practices. This base should be built on a comparison between the sociocultural subsystems (technology, education, economy, and so forth) of the countries concerned, as suggested in figure 1.

Wherever patterns of particular sociocultural subsystems of the countries involved deviate from each other, careful assessment of the environmental setting is required to ensure the relevance of national experience in vocational education for cross-national cooperation. Unfortunately, there are numerous instances in cross-national cooperation where projects have failed, at least partially, because differences in the patterns of the sociocultural subsystems had been neglected. The following serve as illustrations:

- The television series "Sesame Street" is disappearing from international children's television because its compensatory function has been misunderstood outside the United States.
- The so-called Pamong Project of "children's education by the community, parents, and teachers" in Indonesia could not develop to its full potential because certain cultural traits (attitudes about proper education) had not been considered carefully enough.
- A research group in the United States intended to introduce vocational exploration packages in Iran, where the economy allows only for a restricted number of

occupations, and where an excessive unemployment rate prohibits vocational choice on the basis of personal traits.

It is the *differences* in cultural backgrounds between countries that make cross-national cooperation so difficult. Yet it can be done, and it is the *similarities* between countries that make it possible. Therefore, it is upon these similarities that I would like to focus our attention.

What we need to develop are operational frameworks within which we can grasp the cross-national similarities in our field. I would like to propose *human ecology* and *indispensable components of a quality system in vocational education*, as two such frameworks that could help to facilitate cross-national cooperation in vocational education.

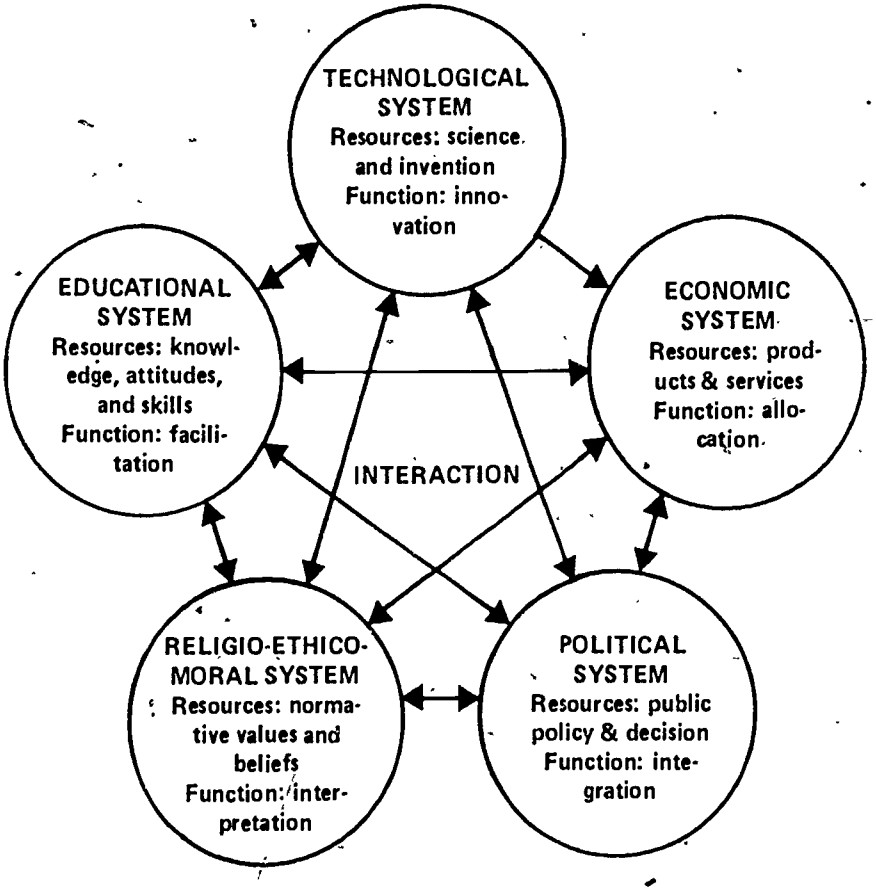

Figure 1. Subsystems of a Sociocultural System

NOTE. Adopted with slight modification from Carey, Robert D. "Conceptual Tools for Research in Comparative Education." *Comparative Education Review* 10, no. 3 (October 1966): 418.

The Human Ecology Framework for Cross-National Cooperation in Vocational Education

The more we realize that the exhaustion of the natural resources of our planet is partly due to the dysfunctional behavior of its inhabitants, the more *human ecology* becomes a necessary frame of reference for education, and for the development of vocational education programs. In a world of uncertain value orientations, we will increasingly have to depend on the implications of human ecological research, indicating tolerance levels for environmental strain on people.

Indeed, alarming signs of human ecological unbalance can be observed in different countries:

- In West Germany, about 25 percent of the children entering school show early signs of mental disturbance (Thalmann 1976).
- In Thailand, more than 30 children per 1,000 population have to work, which totals more than 1.3 million (*World Atlas of the Child* 1979).
- In an American study, 50 percent of all workers performing repetitive tasks in large plants were found to have low mental health scores (Kornhauser 1965).

Worldwide, we are called upon to secure environmental conditions—in our case, working and training conditions—that guarantee that human beings can keep their identity and are not pushed beyond human tolerance levels.

Work and preparation for work are crucial aspects of human ecology. When we examine the following three classical demands that society places on vocational education, we find in all of them the danger of disregarding human tolerance levels:

- *Qualification.* Countless persons in all countries are trained for occupations without possessing the necessary dispositions to perform them.
- *Socialization.* Countless persons in all countries are socialized with the help of vocational education programs into work environments that are highly detrimental to their personal development.
- *Selection.* Countless persons in all countries go through selection processes in their careers that are highly irrelevant to the actual requireents of their jobs and that ultimately cause frustration and discouragement.

Yet in work and in preparation for work, there is a tremendous potential for people to develop their own identities. Only through work can we sustain individual as well as social development. It is therefore the responsibility of vocational education to consider the preconditions necessary for a humane organization of work. Research done by the United States Presidential Task Force on "Work in America," by the Federal German governmental research project on the "Humanization of Work," and research by the Singapore-based "Colombo Plan Staff College," helps to elaborate on aspects of a humane organization of work.

What is finally needed is a more precise definition of human tolerance levels in the cognitive, affective, and psychomotor domains. This intricate task cannot be taken up here. Instead, I would like to reconsider more traditional issues in curriculum development from a human ecological perspective.

Common Curriculum versus Course System of Specialized Curricula

Franklin Keller (1969) referred to such a traditional issue in curriculum development when he once said, "The inescapable fact about people is their diversity. The depressing truth about curricula is their uniformity" (p. 164). This view illustrates the question of whether to maintain a common curriculum or to group children in specialized courses according to interests and abilities.

Keller seems to imply that a humanizing approach to curriculum development should take into account the diversity of people. We are warned, however, that overdifferentiation of curricula in school programs can lead to *intense school stress* and increased susceptibility to nervous breakdowns. In addition to this, a high subject-matter differentiation into specialized courses can uproot the age-level community of children in a school class, because the limited time of togetherness restricts the class to being simply an organizational entity.

A large-scale research project in East Germany has revealed that socialist countries differ from Western capitalist countries in how they view the value of having a common curriculum for all students. In East Germany, Romania, and Bulgaria, the practically standard curriculum for all children has been extended from a required eight years to ten years; in Poland and Czechoslavakia, similar systems are presently being developed. In Western industrialized countries, the priority concern of curriculum development is, on the contrary, consideration for the individual differences of the students (Kienitz 1973).

The aim in curriculum development should be to achieve a balance between a common curriculum for all students and specialized curricula when differentiation is specifically needed. This could result in efforts to extend existing core curricula. For vocational education, it could be interpreted to mean that *priority should be given to an extensive common prevocational curriculum*, which should precede specialized skill training. An extended prevocational core curriculum could create an awareness for the largely common problems encountered on entering into working life and while progressing through it.

Also, the opening up of possibilities for an extension of core curricula in prevocational/vocational education is due to the recognition that behavioral dimensions which have a high degree of transferability among different occupations, are crucial for success in the workplace. This is, for example, true for interpersonal skills, which are mostly non-job-specific. Consequently, despite frequent demands for a higher degree of specialization in vocational education, it seems to be equally important to search for possibilities to extend the common core curriculum in order to establish a balance between uniformity and diversity of instruction.

General Human Development versus Work Force Utilization

Another traditional issue that needs reconsideration in human ecological terms is described by the twin categories, general human development versus work force utilization. These categories are explained by Heyneman's definition (Heyneman 1979) of four types of vocational education returns, as shown in table 1.

Once again, both categories are indispensable for a sound approach to vocational education, but the degree of emphasis placed on either one of them differs widely between countries. For the interpretation of these cross-national differences, a classification scheme developed by Sizer (1966) can be applied. He distinguishes between the following four stages of growth in national education systems:

1. The informal-tribal stage
2. The derivative-symbolic stage (of colonial background)
3. The political-national stage (of emancipation from colonial ties)
4. The individual affluent stage

According to Sizer, it is only in the last stage that the education system can be widely emancipated from its social utility function and can focus on human development from the perspective of the individual. Since only a few highly industrialized nations are in this "individual affluent stage," the satisfaction of basic societal needs (i.e., work force utilization) is still dominant in most countries. Consequently, countries that wish to cooperate in vocational education, but that are in different stages of educational development, have to adjust the priorities of their programs between work force utilization and general human development. Again, it is necessary to be aware of the patterns of the sociocultural subsystems and to take them into account.

Sizer's categorization also helps to explain another aspect of the dichotomy between the twin categories of general human development and work force utilization. This aspect points to a genuine feature of American education: Since the United States is, according to Sizer, in a position to give priority to individual autonomy in its education system, it can offer its young people a kind of exaggerated protection zone up to the point when they leave school. Upon entering the labor market American youth experience an extreme shift to a utility orientation, which is generally considered as the *real* life perspective. Individual autonomy now becomes negotiable on the basis of money; that is, one is reimbursed for partially sacrificing one's autonomy. This change in orientation at the point where the young people leave school—to wit, the overprotection in school as opposed to the overexposure to real life after leaving school—is an American phenomenon. This lack of continuity in the objectives of human development is harmful in human ecological terms.

On the whole, the perspective of *human ecology* could provide a useful orientation scheme for future activities in cross-national research and development. However, guidelines should not only be outlined for future activities; it is also necessary to make the current experience of programs in different countries accessible for cooperation in vocational education. This calls for stocktaking and a cross-nationally applicable categorization of current practices in the field. Therefore, an attempt is made here to define indispensable components of a quality system in vocational education as a second framework. These components provide guidelines for cross-national cooperation in vocational education reform on the basis of our cumulative experience in a large number of countries.

TABLE 1

VOCATIONAL EDUCATION RETURNS

	General Human Development	Work Force Utilization
Personal	Personal gratification; communication skills	Individual productivity
Societal	Responsible citizenship; "moral" behavior; standards of health	Aggregate productivity

SOURCE: Heyneman, 1979.

Second Framework for Cross-National Cooperation in Vocational Education: Indispensable Components of a Quality System in Vocational Education

The second framework for cross-national cooperation in vocational education calls for a closer look at existing vocational education programs in different countries. For this framework it is necessary to define components that constitute a quality system in vocational education in different countries.

When approaching this task, we have to be aware that internationally, a series of studies has already been addressing the question—What gains in preparation for work does vocational education provide? Yet, even the recent longitudinal studies in the United States (i.e., Project Talent, Youth in Transition, National Longitudinal Study of the High School Class of 1972, and the two National Longitudinal Surveys) have not come forward with sufficient information on this question (Woods 1980, p. 35 ff).

We know, however, from our own daily experience; that vocational education *does* provide useful preparation for work, and we should therefore center our attention immediately on a second generation of studies attempting to answer the question—What *kind* of vocational education provides the most valuable preparation for work?

In order to approach this latter question two things should be kept in mind. First, as Gene Bottoms, executive director of the American Vocational Association, stated in an address here at the National Center, and as the West German Ministry of Education and Science similarly phrased it, "We do not yet know—worldwide—what design an ideal comprehensive system of vocational education should have for a given situation." Second, however, when we look at abstracts of exemplary American projects, such as those listed in *Profiles in Career Education Projects* or in *Forschungsergebnisse 1980/81 (1982)*, the catalog of R&D projects funded through the West German Institute for Vocational Education, we become aware that there exist—worldwide—numerous quality vocational education and vocational guidance programs that are targeted to particular aspects of vocational development.

Consequently, what is missing is (1) the identification of indispensable components of a quality, cross-national system in vocational education (of course limited to a number of countries with similar sociocultural patterns, for which such a system could be established); and (2) the examination of the interrelationship of those indispensable components.

In industrialized countries, but with limitations also in developing countries, certain indispensable components of vocational education can be distinguished. I have, in my studies, identified five such cross-national components. If present, they seem to guarantee the basic quality—regarding individual as well as societal gains—of a country's vocational education system. These components are heterogeneous in that they are partly content oriented, partly related to methods of instruction, and partly associated with organizational structures of learning. Yet *all* are of similar importance for building a comprehensive quality system in vocational education.

Emphasis on Non-Job-Specific Interpersonal Skills and Skills Related to Coping in the Work Environment

The first cross-nationally indispensable component of vocational education is emphasis on non-job-specific interpersonal skills and skills related to coping in the work environment. The acquisition of such skills is mainly the objective of *pre*vocational curricula that focus on sociopsychological aspects of work and the work environment.

Over the past decade, new prevocational curricula (such as parts of career education) have been introduced in many developing as well as developed countries. In particular, we have increasingly experienced *two trends* in the design of vocational programs in the United States, in the developed countries of Europe, and to a certain extent in socialist countries. There has been—

1. the postponement of traditional skill training during secondary school years to later (even postsecondary) years of learning; and

2. the extension of prevocational curricula into earlier years of schooling, even down to the preschool period.

This trend of extending prevocational programs to earlier years of learning and confining skill training to later years of learning was accompanied by a shift in the focus of vocational education away from mere skill training, for the following reasons:

- Follow-up studies revealed that a large proportion of the students were not in the jobs for which they had been trained.

- Schools were often not equipped, either in terms of finances or personnel, to provide quality, up-to-date training.

- Highly specialized training hampered the necessary transferability of skills from one job to another.

- The use of simple tools was found to be sufficient for on-the-job performance to an unexpected extent. Even in a highly trained work force like that found in West Germany, higher level machinery such as computers or automatic machines was being used by only 15 percent of the working population; 24 percent were using mainly simple tools (such as a hammer); 9 percent were using motor-driven tools or hand-steered machines; 11 percent were using cars, cranes, or other transportation systems; 12 percent were using simple office machines (such as typewriters or telephones); and 18 percent were using just paper and pencil. (Jansen 1980, p.3)

Furthermore, analysis of on-the-job problems, especially of young workers, has shown that there is only partial truth to the old idea that the best trade preparation for prospective workers is to teach them the skills of the trade. Research gives evidence that it is the non-job-specific, interpersonal skills, as well as skills related to the work environment, that are more influential to success on the job (Haccoun and Campbell 1972, pp. 22,62). For coping in the work environment, the skills needed most seem to be the following:

- *Attachment.* The degree of need in a person for regularity in job behavior (Edwards 1979)

- *Technical literacy.* Understanding the technological/industrial basis of working processes (Rudisell et al. 1976)

Prevocational-type curricula that are not geared towards the acquisition of specific skills for an occupation—such as career education up to the exploration stage, parts of industrial arts programs, and certain work experience programs—are gaining importance in many countries as they have already done in the United States. Consequently, the advantages of prevocational-type curricula are as follows:

- Such curricula can be used early in school life to begin the important task of creating career awareness. The development of career awareness should begin in preschool or first grade; if it is begun later, there is the danger that a full understanding of it can no longer be achieved. (Venn 1976).

- They can provide the basis necessary for self-determined career decision-making (vocational orientation and exploration)

- They can create an awareness for the current necessity of horizontal vocational mobility. Preparation for this type of mobility is becoming one of the most important objectives of education for work.

- Prevocational-type work experience programs are in a good position to emphasize the necessary acquisition of interpersonal skills through experiential learning.

Additionally, prevocational programs have a largely untapped potential for helping individuals cope with unemployment. This becomes evident in a British research study (Watts 1979), which defines the curricular objectives relating to the issue of unemployment under the following headings:

- Employability skills

- Adaptability awareness (regarding the range of possible employment)

- Survival skills (in a situation of unemployment)

- Contextual awareness (regarding the reasons and responsibilities for unemployment)

- Leisure skills (to make good use of increased leisure time)

- Alternative opportunity awareness (for opportunities other than employment and unemployment)

- Opportunity creation skills (to create one's own employment)

Prevocational curricula cover these curricular objectives better than any other curriculum area.

Structural changes in the labor market also seem to support the need for a shift in emphasis away from skill training. Regarding the individual enterprise, we can observe a tendency cross-nationally towards an increase in the average number of employees. In West Germany, for example, the number of corporations with more than 20 employees decreased between 1978 and 1980 from 49,649 to 48,777, whereas at the same time there was an increase in the total number of employees in this category from 7,584 million to 7,659 million (as established through a telephone call with the West German Bureau of Statistics on June 26, 1982). This implies that employees have to cope with more complex organizational structures in their work environment. They will need more insight into these structures and better interpersonal skills in order to operate within them.

The need to give priority to teaching such skills on a prevocational basis can also be seen in reviewing the following trends:

- Currently, there are numerous sociopsychologically oriented initiatives in industrialized countries that work towards a humanization of work and the work environment.

- Currently, there is a tendency to redesign in-plant programs in vocational education away from closely related "job training" towards broader concepts of "employee development."

In summary, the emphasis on sociopsychological aspects of work in *prevocational curricula* (as opposed to a socioeconomic emphasis in skill training) can be considered cross-nationally as a well-established trend in vocational education reform in developed countries. This development seems to be in line with human ecological demands, an increasing necessity for horizontal mobility, attempts to diminish the threat of unemployment in individual careers, and an increasing demand in the labor market for interpersonal skills.

Emphasis on the Integration of General and Vocational Education

The second cross-nationally indispensable component of vocational education refers to an issue almost as old as in-school vocational education itself: emphasis on the integration of general and vocational education.

The issue has been at the core of endless debates in many countries of the world, from Indonesia and West Germany to recent considerations in the United States (e.g., Feldman 1980). Wherever vocational education programs are established, the questions of barriers to entry into the programs, self-image problems of the teachers and students, restricted access to further education, and limited career prospects of the graduates are intrinsic parts of the problem of achieving a successful integration of general and vocational education.

It might be surprising, then, to realize that the *roots* of the discrepancy between general and vocational education vary widely between countries. Most *developing countries* still have to fight their colonial heritage to a certain degree. A type of education was forced upon them that reflected the cultural facets of colonial power. It was only through successful completion of this type of education that natives had access to senior positions in their own country. The few vocational programs that existed had been designed for the simple craft needs of a colonial economy. The resulting stigma of vocational education as a second-rate education for poorly educated natives is still prevalent in many developing countries with a colonial background (Morsy 1979; UNESCO-ROEAO 1980).

In *West Germany*, 55 percent or more of an age group go through an apprenticeship system (see table 2, which shows the distribution of young people after the end of compulsory education). West Germany has relied on separate vocational schools for the theoretical instruction of apprentices. West Germany, Austria, and Switzerland are *the* apprenticeship countries of the world.

The justification for the split in West Germany between general education in common schools and vocational education in separate schools has, up to the present, been argued along philosophical lines. The neohumanist claim that vocational education can have no more than a utility function is still being debated in the light of the present situation. The debate, however, has helped little in solving the practical problem of a physical separation of general and vocational courses. However, due to the traditionally high reputation of crafts in Germany, the effects of this physical separation are partly counterbalanced.

TABLE 2

DISTRIBUTION OF YOUNG PEOPLE AFTER THE END OF COMPULSORY EDUCATION

	SWITZERLAND	AUSTRIA	NETHERLANDS	FEDERAL REPUBLIC OF GERMANY (end 10th year)	FRANCE	DENMARK	UK	IRELAND (end 10th year)	CYPRUS	PORTUGAL
"Grammar school" courses	10%	13%	10%	25%	35%	60%	10%	65%	60%	70%
Full-time technical and vocational courses	16%	25%	65%	15%	33%	10%	10%	0%	15%	0%
Apprenticeships	60%	50%	3%	40%	12%	10%	20%	10%	5%	10%
At work and unemployed	14%	12%	22%	20%	20%	20%	60%	30%	20%	20%

NOTE. These figures refer to the period immediately following the end of compulsory schooling. A year later, the 60 percent in the first column for Denmark falls to 32 percent.

SOURCE: Deforge (1980).

In the *United States*, even before the vocational-liberal studies controversy in the early twentieth century, the discrepancy between general and vocational education became a prominent issue. The controversy actually originated in higher education, where the expansion of professional studies was rejected by a strong group of proponents of a pure liberal arts orientation for the university. (In 1854, Francis Wayland, president of Brown College, argued for the inclusion of professional studies in the university; the famous *Yale Report* of 1882 argued against this concept.) Today, there is a high degree of organizational integration of general and vocational education at all levels of education in the United States. Yet the split between the two is perpetuated to quite a degree *within* the institutions themselves. Teachers and students of high school academic programs still have little in common with their vocational counterparts; and similarly, vocational-terminal and transfer programs in community colleges are still widely separated from each other.

Cross-national experience seems to hold little promise of solving the integration problem, and yet educators in many countries continue to work at the different aspects involved in bringing general and vocational education together. In spite of the variety of approaches and the different cultural preconditions in this issue, the recommendations made are basically targeted towards the following *three problem areas* (Dubin 1973):

- *Physical separation* of general and vocational education into different institutions
- *Temporal separation* of general and vocational education, usually in that vocational courses do not start before partial completion of general education requirements
- *Functional separation* of general and vocational education on the level of subject matter, so that the two areas are designed to prepare students for different functions.

Regardless of cross-national differences, there seem to be mutually similar degrees of difficulty involved in combating these problems. Attempts are generally made to combat the more easily solved problems first (i.e., physical integration and temporal integration). The problem that seems to be more intricate—functional integration—is therefore usually taken up last. When considering these problems individually, we note the following:

- The *physical integration* of general and vocational education (i.e., the inclusion of both modes of education in one institution) has been one of the basic goals of comprehensive high schools (such as those in Sweden) and of the common comprehensive schools in socialist countries. However, the move towards a physical integration is not a sufficient measure in itself; it tends to shift the discrepancy from an *inter*institutional to an *intra*institutional level.
- The *temporal integration* of general and vocational education (i.e., the simultaneous scheduling of general and vocational education courses) is presently part of vocational education reform movements in developing countries such as India and Tanzania. There, prevocational and vocational courses are increasingly being offered in the elementary school years. Even in combination with physical integration, temporal integration has not proved to be an efficient means of overcoming the problems of the discrepancy between general and vocational education, as can be seen from the experience with the comprehensive high school in the United States.
- The *functional integration* of general and vocational education (i.e., the blending of contents from both modes of education) is partly practiced in the United States (in the concept of career education) and in socialist countries (through polytechnical education and the principle of combining education with productive work). When combined with physical and temporal integration, this approach has so far been the most promising. Developments in the United States show similarities to the approach in socialist countries, although the philosophical foundations differ greatly.

The functional integration of general and vocational education—as the only approach to this issue that has shown signs of success—will be most usefully discussed here in its Eastern European and its North American form. Using Poland as an example of an Eastern European socialist country, we find that a distinction is made between the following:

- General education
- Polytechnical education
- Vocational education

Polytechnical education is defined as providing basic education for all students to help them understand processes of production and the determinants of worker productivity, as well as possibilities of work with simple tools (Pecherski 1977). The philosophical basis of this concept

lies in the Marxist notion of the general nature of a human as a socially productive worker. This concept is crucial for socialist countries, since work—together with technological change—is considered a vehicle for social change.

In the *United States*, career education could provide a basic vocational education for all students. It is a mode of education that attempts to blend general and vocational education aspects into what could be termed "general vocational education." Career education, when viewed in its totality, has its foundations in an anthropological concept of work, which holds that preparation for work is an integral part of human development. Vocational education is, therefore, as basic and "general" as education can be. In applying this anthropological consideration, career education has demonstrated its potential for a cross-nationally valid approach to the functional integration of general and vocational education.

In summary, the issue of an integration of general and vocational education is cross-nationally as prevalent as it ever has been. In most developing and developed countries, physical and/or temporal integration are employed as the common approaches. The United States and the socialist countries are currently pursuing approaches to a *functional integration* that *seems to lead the way* for further developments.

Emphasis on Basic Skills: The Three R's

The third cross-nationally indispensable component presented here is emphasis on basic skills (the three R's), even though the learning of basic skills is not strictly an objective of vocational education. This component provides an important basis for successful participation in vocational education programs. Due to its origin outside of vocational education, it will, however, be mentioned only briefly, and suggested for your further consideration.

Apart from its relevance for performance in most jobs, the command of basic skills is, I believe, a necessary *requisite for being a self-reliant worker* in any country. Only with command of basic skills can a worker adequately consider the conditions of his or her own employment (through reading, writing, and basic arithmetic).

The similarity of purpose that basic skills have to fulfill in different countries is as striking as the cross-national differences in the provision for their instructional base in formal and nonformal education systems. On the one hand, developing countries establish the teaching of basic skills as the initial step in the development of *compulsory education* and nonformal education programs. On the other hand, in industrialized countries, systems of education exist that continue what has been termed as ten years (or even more) of compulsory miseducation, and basic skills are introduced here as compensatory education for what has not been achieved in all these years.

In both cases, a similar problem exists: Human development is hampered by the lack of basic skills in reading, writing, arithmetic, and probably what has become known as "general awareness" in developing countries (Rahnema 1978). Also in both cases, vocational educators are concerned, since the lack of basic skills is a fundamental threat to the success of vocational education programs.

Emphasis on Sequencing Curricula for Lifelong Vocational Learning

The fourth cross-nationally indispensable component of vocational education is emphasis on sequencing curricula for lifelong vocational learning. The importance of a sequential system for

lifelong vocational education is being recognized throughout developed and developing countries. The scope of national reform initiatives ranges—

- from still poorly coordinated attempts at sequencing prevocational curricula at the elementary and lower secondary levels in West Germany (Mende, Reich, and Weber 1976);
- to highly differentiated and sequenced course offerings in Australian postsecondary education (Byrne 1979);
- to initial steps towards sequencing curricula for adult learners through the introduction of postliteracy programs in developing countries like Bangladesh and Mali that have the maintenance of skills once acquired but hardly used as their objective. (Dave 1980)

Regarding the development of a sequential system for lifelong vocational education, the United States is unique in combining prevocational/vocational efforts in the following fields: industrial arts, high school vocational education, technical education in the community college, and postsecondary and adult education. These efforts are, to quite a degree, targeted at successive age levels of a lifelong scheme of vocational development. In addition, vocational guidance and career education strive to encompass the total vocational development spectrum of the individual in their programs.

Along with these programs, the enormous scope of American research activities related to the lifelong process of vocational development has provided valuable evidence that a promotion of this process through educational programs is necessary and effective. *The lifelong continuity of an individual's vocational development requires, for its promotion, a corresponding continuity of educational efforts in the home, community, and school.*

There also is evidence, from research studies dating as far back as Nelson (1963) and Gunn (1964), that educational programs should particularly be geared towards the early stages of vocational development. Children at an early elementary school age (1) already possess a differentiated knowledge of quite a number of occupations, coupled with (2) a high degree of instability with regard to their vocational preferences, and (3) they are prone to early vocational prejudices through a marked inclination towards sex-stereotyped and stereotyped negative reactions to certain occupations.

The fact that among elementary school children three-and-a-half times more negative than positive reactions towards occupations have been counted (Nelson 1963) could have the effect of severely limiting their perceptions of possibilities for future vocational choice. Therefore, early introduction of career-awareness-type programs is very necessary in order to stimulate and enlarge the career outlook of children. Career development schemes can serve here as the theoretical basis for sequencing prevocational/vocational curricula from the preschool period onwards.

The American *developmentalists* (especially Eli Ginzberg and Donald E. Super) have contributed definitions describing the developmental stages of a lifelong process of gaining vocational maturity, as well as of passing through the different phases of a career. Super's categorization (1974) especially, and the research behind it, has led to a tremendous refinement in the description of the particular stages of career development during a life-span.

The American *differentialists* (especially John Holland and Anne Roe) have contributed definitions of job-specific and job-related environmental aspects and corresponding personal traits. Especially through Holland's categories and their application to a variety of occupational problems, we have gained a much clearer understanding of the life-space (environmental) factors of career-related decision making.

When taking into account the contribution of both the developmentalists' and the differentialists' approaches to vocational development, it becomes clear that a truly comprehensive synthesis of the life-span approach of the developmentalists and the life-space approach of the differentialists has still not been attempted. From such a synthesis, new impulses could arise for sequencing vocational curricula and differentiating their contents.

Already American theories on different aspects of vocational development have led—especially in Western industrialized countries—to a host of research and development activities. Most of the research suggests that informational, advisory, and educational interventions should be differentiated further and improved as part of sequenced services and programs in order to support and guide the career development process.

In Great Britain, it has been argued that the introduction of sequenced vocational education activities on the basis of developmental theories may be desirable, but is still too distant from actual practical attainment. Therefore, a more practically oriented theory such as Holland's has greater value for an immediate application (Wallis 1978). There is a similar situation in the Netherlands, where numerous smallscale initiatives in prevocational/vocational education and vocational guidance exist. There, it seems advisable to employ a developmental approach to tie them together into sequenced services. Yet this task has not been taken up; instead, John Holland's self-directed search has been adapted to the conditions in the Netherlands and has been introduced by that country's Department of Labor (Hogerheijde 1981).

In developing countries, sequencing in vocational education is at too early a stage of implementation to exploit the full potential of vocational development theories (see Watts and Ferreira-Marques 1978, on India, Kenya, Malaysia, and Brazil). However, progress has been made in establishing minimal sequences of preparation for work through initiating prevocational/vocational programs at the elementary and the secondary levels of schooling. One of the main functions of these minimal sequences is to increase school retention rates. Potential school leavers are first kept in elementary school through the motivational force of useful employment in prevocational/vocational courses, and are then channeled, where possible, into vocational programs at the secondary level.

Sri Lanka started a (prevocational) practical skills program in the elementary years, and in India, similar programs for in-school work experience have been introduced. On the average, enrollment in secondary vocational education more than doubled in all countries of Asia and Oceania between 1965 and 1975 (UNESCO-ROEAO 1980).

Most of these newly introduced courses and services in vocational education and guidance are based on the conception that it is essential to promote vocational development through activities that supplement each other within sequenced curricula. The sequencing of activities and curricula has to be oriented to stages of vocational development, such as those in figure 2 for the kindergarten through twelfth grade age span.

• Awareness		• Awareness
• Systematization		• Orientation
• Experimentation	[or]	• Exploration
• Employability/Further Education		• Preparation
(Terminology from UNESCO Institute for Education Project 4.22)		(Career Education Terminology)

Figure 2. Stages of Vocational Development (K-12)

Further stages have to be added to extend this scheme into the adult years. This would finally portray a lifelong process of vocational development.

In summary, *it is necessity to establish sequences of curricula and supplementary services for vocational development during a lifetime*, and this has been emphasized cross-nationally. However, the degree of realization in sequencing differs greatly between developing and developed countries. Financial constraints have resulted in restricted progress in developing countries. Among the developed countries, the American concept of career education is at the forefront of consistent sequencing of prevocational/vocational curricula from kindergarten through twelfth grade.

Emphasis on the Formation of Compound Systems for In-School and Out-of-School Learning Resources

The fifth cross-nationally indispensable component of vocational education is emphasis on the formation of compound systems for in-school and out-of-school learning resources. The necessity to include this component is supported by a worldwide trend towards combining in-school learning with the reintensification of "out-of-school" learning as the original mode of learning before schools were established. The main reasons for this trend seem to be that the *advantages of both modes of learning* are increasingly being recognized, and that attempts are being made to improve the quality of learning through combining the two modes.

In 1967, a study in the state of Ohio showed for out-of-school white males who had work experience the year prior to leaving school, an unemployment rate of less than one-fifth that of out-of-school youth without previous work experience (3.1 compared with 15.6 percent; *Manpower Report of the President* 1972, p. 90). Furthermore, the evaluation of experience-based career education programs has demonstrated that experience outside the school has a strong motivational impact on learning. Such factors, along with other reasons, have led to a heavy emphasis on work-experience programs in Sweden (Cardell 1981). There, the authorities were faced with an extremely poor motivation of students in comprehensive schools (Husen, Fagerlind, and Liljefors 1974).

In developing countries, however, work experience programs are widely used for skill training purposes as a compensation for the lack of training facilities in the schools (McLaughlin 1979).

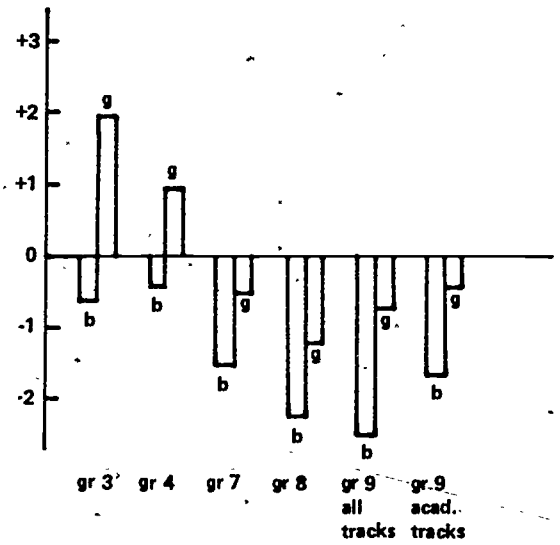

Figure 3. Results on the School Motivation Scale at Different Levels of the Swedish Comprehensive School

All these different approaches to the establishment of work experience programs conform to the trend towards an increased implementation of out-of-school learning resources. The trend has two dimensions:

1. *Schools* in many countries are approaching their communities in order to provide their students with real-life experiences and to involve the members of the community in educational decision making.

2. *Communities* in various countries are approaching their schools in order to participate in educational decision making, since they provide a large portion of the funding base for schooling.

Historically, we seem to complete a cycle of nonschool-school-nonschool development. Initially, the common school in Western industrialized countries was designed to take up functions in the preparation for life that the home could no longer fulfill, and to help with nation-building. The common school eventually changed its supplementary role into almost a *monopoly* for learning possibilities. Today we observe the countermovement in the extension of learning possibilities to out-of-school environments. As part of this development, the United States has over the last thirty years gone—

- from *schooling*;
- to partially *free*-schooling;

- to demands for *de*schooling;
- to *gradual* deschooling.

Hence, in the United States, gradual deschooling in vocational education is the present tendency regarding the issue of implementing different learning environments. It can be achieved in two ways: (1) students go to out-of-school learning environments; or (2) out-of-school resources (mostly resource persons) are brought into the school.

Our interest is in the implementation of out-of-school learning environments. Work experience programs in out-of-school settings demonstrate the following advantages over in-school vocational education:

- In-school simulation of work processes only partly duplicate the sociopsychological factors of the real work situation.
- Work experience on the job, especially in developing countries, can help cut costs for vocational education.
- Work experience programs often serve as a first step towards successful job-placement of students.
- Finally, work experience programs help improve school community relations.

With regard to out-of-school work experience, a variety of different learning strategies is employed cross-nationally for career awareness, exploratory, and preparatory purposes. These are briefly reviewed in the following list.

- *Mini-experiences* of about one to three days can serve as work awareness programs in the early elementary years, and as exploratory programs for a specific aspect of an occupation or a skill in the secondary years (a common practice in socialist countries).
- *Work experience* programs of at least three weeks duration can serve as exploratory programs for an occupation or as prepartory programs for experiencing work environments. Both are implemented in the secondary years of schooling (primarily in Western Europe).
- *Cooperative education* can have, beyond the exploratory function, the purpose of skill training in a particular occupation. These programs are carried out in the upper secondary years and vary widely in duration (primarily in the United States).
- *Semiskilled programs* have the function of providing on-the-job training for a semiskilled occupation after the completion of full-time school. There is a contractual relationship between "learner" and "employer," often including arrangements for continuing education. The duration is up to two years (primarily in Western Europe and developing countries).
- *Apprenticeship programs* provide training within a dual system for a skilled occupation to youths of fifteen and older. On-the-job practical training is supplemented by in-school theoretical instruction. The practical part is based on a contract between the apprentice and the employer; the theoretical instruction may be during the employer's time. The duration is usually three years or more (common practice in many countries).

Compared to these types of out-of-school work experience, mere out-of-school learning experiences (such as field trips, shadowing, and other observational experiences) lack the experiential dimension, and will not be considered here.

The above strategies for learning in out-of-school learning environments are with slight variation both in developed and in developing countries. These strategies provide efficient *linkages between learning and working* from the preschool level onwards. The *degree of intensity* of these linkages can extend from separation between learning and working to communication, to participation, to substitution, and to integration (Ferrin and Arbeiter 1975). The trend towards an increase in out-of-school vocational learning is hence important for the intensification of linkages between education and work.

The intensification of linkages between education and work should be the central objective in the design of *compound systems* of learning environments for vocational education. In such a compound system for vocational education, opportunities for formal, semiformal, and informal learning should supplement one another to constitute an overall "curriculum" for effective vocational development of individuals. However, such a design has not yet been adequately realized in most countries.

In summary, out-of-school learning resources are increasingly being utilized cross-nationally to provide work experience related to the awareness, orientation, exploration, and preparation stages of vocational development. The more the relationship is between the schools and the potential out-of-school learning resources in a given country, the more elaborate are the modes of utilizing this potential. The United States, the socialist countries, and Sweden seem to have implemented the most complex systems of education and work interaction. The developing countries are, to quite a degree, utilizing the potential of out-of-school learning resources for vocational education, but they often lack the organizational framework for efficient in-school and out-of-school cooperation. However, even in complex systems of education and work interaction, compound systems of voational education encompassing formal, semiformal, and informal modes of learning in in-school and out-of-school environments are still at an early stage of realization.

Summary and Conclusions

Human ecology and *indispensable components of a quality system in vocational education* have been outlined here as frameworks for cross-national cooperation in vocational education. Both frameworks are hypothetical in nature; they will need refinement and probably also supplementation. Furthermore, the issues involved in both frameworks will need to be adjusted to respond to the ever changing conditions of learning in the "endless renaissance of education" (Marland 1972).

The frameworks have been developed on the basis of different *total-systems approaches to issues in vocational education.* They are suggested here as necessary steps towards the elaboration of a cross-national model for cooperation in vocational education.

As part of the refinement of the frameworks, it will be necessary to examine the interrelationship between the five indispensable components that have been outlined. Whereas this interrelationship cannot be studied in detail here, it may be approached on the basis of the matrix in table 3.

TABLE 3

MATRIX FOR THE INTERRELATIONSHIP BETWEEN INDISPENSABLE COMPONENTS OF A QUALITY SYSTEM IN VOCATIONAL EDUCATION

	I. Emphasis on Non-Job-Specific Interpersonal Skills and Skills Related to Coping in the Work Environment	II. Emphasis on the Integration of General and Vocational Education	III. Emphasis on Basic Skills: The Three R's	IV. Emphasis on Sequencing Curricula for Lifelong Vocational Learning	V. Emphasis on the Formation of Compound Systems of In-School and Out-of-School Learning Resources
I. Emphasis on Non-Job-Specific Interpersonal Skills and Skills Related to Coping in the Work Environment					
II. Emphasis on the Integration of General and Vocational Education					
III. Emphasis on Basic Skills: The Three R's					
IV. Emphasis on Sequencing Curricula for Lifelong Vocational Learning					
V. Emphasis on the Formation of Compound Systems of In-School and Out-of-School Learning Resources					

In light of the present world situation, it can be expected that a considerable part of the future work in vocational education research and development will be crossnational in scope. Apart from intensified cultural cooperation between the countries of Western Europe, North America, and Japan, the economic and cultural support for developing countries is gradually increasing as part of the North-South dialog. For success, such activities require the development of a cross-national model for cooperation.

For the development of this model, the two frameworks suggested here can help to avoid the risk of an undifferentiated transfer of vocational education know-how between countries. The present transfer of technological know-how lacks, in many cases, sufficient consideration of differences in the sociocultural subsystems concerned.

Regarding the national resources to be drawn upon for the development of the model and for cross-national cooperation itself, the United States can look back on the world's longest history of preparation for work in high school. Due to far-reaching legal provisions for the support of innovative programs, the United States has developed a host of alternative approaches in vocational education, and it is unique in the way that vocational education and vocational guidance compose two independent fields of research that supplement each other through their findings. With these resources, the United States is in a splendid position to help other nations solve their problems in vocational education and to preserve, at the same time, its openness for accepting innovations and reforms across national borders.

QUESTIONS AND ANSWERS

Gert Loose

Question: Would you distinguish between two of the components that you have defined as indispensable to quality vocational education: component two, emphasis on the integration of general and vocational education, and component three, emphasis on basic skills?

The two components approach an individual's vocational development from different perspectives. Component three (emphasis on basic skills) stems from the awareness that the basics of what traditionally has been understood as "general education" are important requirements for effective vocational education programs. Component two (emphasis on the integration of general and vocational education) could be considered as an operationalization of the recognition that vocational development is an integral part of overall human development. If general education has the function of promoting general (human) development, it is necessary to include vocational content.

Question: Why have the major policies developed for career education not been realized? These were good programs, but they were not put into practice? Is there a differentiation between plan and practice in this instance?

Career education is an American concept. It combines the rich practical experience of vocational education and vocational guidance in your country. For me it is the outstanding concept of preparation for work in our century, especially when we consider the total life-span (temporal dimension) as well as the total life-space (situational dimension) of learning, both of which are encompassed in this concept.

As I see things, there seem to be four major problem areas responsible for the incomplete realization of career education in the United States.

1. Even today, many of its policies are too complex and too profound to be grasped adequately by the piecemeal approach of most of our research. This inability of research to explain the full potential of career education programs has resulted in a drop in support for their implementation.

2. The unique existence of vocational education and vocational guidance as two independent—though, in content, closely related—areas of research in the United States was essential for the formation of career education. However, the realization of career education programs was hampered, since the translation of the concept into practice vocational education and vocational guidance engendered rivalry, competition in funding, and misunderstandings of the concept's implications.

3. Preparation for work in the United States has, in my opinion, always had a certain deficiency at the level of skill training. In the 1960s and 1970s, it was felt that reform at this level was badly needed. There was some disappointment that career education did not specifically address this aspect.

4. Educational reform in the United States is, to quite an extent, monitored by the way in which fund-giving legislation favors the initiation of relatively small, short-lived projects with a limited scope. This approach to reform was not suitable for implementing complex career education programs, which had as one of their main values the well-conceived linkages between a number of program parts.

Question: The Public Broadcast System's program, "Sesame Street," was shown in other countries, but did not do well there. Were the compensatory education portions misunderstood in these countries?

"Sesame Street" was originally developed in the United States with a compensatory function to help black children. A program developed for this function should not be expected to work in the kind of context that exists in most places in Europe—where black children are seldom encountered and the population has had no experience in the kind of problems that gave birth to the program in the United States. Hence, the program's mission just did not match the actual social situation abroad.

Question: What is the role of industry and labor unions in providing vocational education and apprenticeship programs?

The role of industry and labor unions in providing vocational education and apprenticeship programs varies widely from country to country. In developing countries, the organizational structure of industrial enterprises is often used for the establishment of educational programs. In the case of Niger, for example, industry is legally bound to offer courses for employee development, whereas the unions are not powerful enough to play a role as organizers of educational programs. In the "apprenticeship countries" of Western Europe—Austria, West Germany, and Switzerland—industry has partly retained self-government of the apprenticeship programs in the way apprenticeships had been administered through the guilds since medieval times. The unions have at no time exerted much influence on apprenticeship education. They are not even represented on the apprenticeship committees.

Question: Is the German apprenticeship program similar to apprenticeship programs in the United States?

I have already mentioned the differences in historical background and trade union involvement. Basically, apprenticeship programs in the United States and West Germany have very little in common. Most Germans enter their apprenticeship around the age of fifteen. They receive their theoretical instruction in separate vocational schools, which they attend for one or two days a week (or the equivalent of it in blocks of several weeks' duration) during the employer's time. Finally, in Germany financial compensation is paid in the form of a small stipend. Hence, we are dealing with two basically different programs.

Question: In terms of cross-cultural understanding, does the learning style of a culture affect the delivery of vocational education?

Learning styles differ widely between cultures and require matching modes of delivery. The United States seems to favor an experiential approach to vocational learning, whereas the countries of Western Europe are generally more inclined towards a theoretical approach to learning the skills of a trade. The consequences go beyond the delivery of vocational education into teacher training. Western European countries emphasize the academic qualifications of vocational teachers; in the United States on-the-job experience is considered more important for

teaching vocational education. Also, even within a country as large as the United States, learning styles can differ considerably. This is demonstrated by the failure of a Californian research group to obtain information about unmet educational needs through establishing teacher-parent conferences in American Samoa. The fact that the scheme of a teacher-parent conference requires teachers to learn from parents did not correspond with the Samoan style of learning from authorities. The teachers, who are regarded as such authorities, silently resisted the program.

Question: Which suggestions for vocational education reform in the United States would you make on the basis of a comparative approach?

Comparative vocational education is usually concerned with reform in the country of the respective researcher. Therefore, my remarks regarding possible priorities for the reform of vocational education in the United States can only be speculative in nature.

1. The pathways for the transition from school to work seem to deserve some reform in the United States. The transition from school to work is a critical discontinuity in the life of an individual, and I regard the smoothing of such discontinuities as one of the main functions of education. The best practical education program that I know of for overcoming this discontinuity is the Western Europe version of the apprenticeship system. It is based on a quasi-educational relationship in which the master mechanic and selected journey-persons introduce youth of about fifteen to nineteen years into work in a particular occupation, and also provide the opportunity for the acquisition of highly transferable job-coping skills. School still is an important factor, with one or two days full-time attendance per week. And a limited financial compensation in the form of a small stipend indicates that the program cannot be considered as gainful employment. With the necessary cultural adaptations, the American apprenticeship system could probably be reformed along those lines and broadened in its scope to serve more occupations.

2. With the improvement of vocational programs in the United States, the reputation of the field has also improved considerably. This aspect is so important for the success of vocational programs, however, that further efforts are still needed. Countries with high academic standards in the certification of vocational teachers (as opposed to the United States, where on-the-job experience is given priority) regard this as an effective device for upgrading the reputation of the field. It is not sufficient to insist on the equality between work with the "head" and with the "hand." The verbal level on which teachers of academic and vocational subjects and their students communicate is closely linked to academic achievement. Therefore, the experience with certification schemes that require the same amount of coursework in teacher training from all teachers in secondary education has been quite successful and could be recommended as a model for reform in the United States.

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