WESTERN GOVERNORS' ASSOCIATION

Occupational Education, Economic Competitiveness, and The West

By William Chance

JULY, 1988

Western Governors' Association

Western Governors' Association
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TO: Governor Romer

FROM: Jo Clark Jo Clark

SUBJECT; Your role on education during WGA Annual Meeting, with attached speaking points.

Governor, your role during the meeting has several parts:

1. You should make comments of your own and then lead discussion among the governors from 3-4 p.m. during the Monday afternoon plenary, "Sharpening the West's Competitive Edge.

2. You should look at the education program for next year's workplan in the briefing book (p. 37, Board of Directors tab) and decide if you want to change it during the business meeting, 9:00-9:45 Monday morning.

3. You could consider raising education with the Western Regional Council during the private breakfast Tuesday morning.

You should be aware that several other governors have expressed strong interest in this topic and that Governor Mofford has asked to serve as co-lead next year.

If you have any questions, you can call me as well as Bart.

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A. The Problem

The existing educational system is not meeting the needs of the new economy, and it costs too much.

B. Now, Therefore:

1. The states of the region must restructure their educational systems and find more effective ways of utilizing all educational resources.

   How?

   - Change the emphasis from time-in-class requirements to competencies and outcomes.

   - Provide effective systems for measuring competencies and outcomes.

   - Insist that all students achieve essential competency levels by age 16.

   - Make present 11th and 12th grades a transition period to post-secondary education, vocational education, apprenticeships, cooperative education, etc.

   - Allow parents and students choice among schools and educators freedom to choose how and where they will teach.

   - Explore contracts with industry for access to industrial training and other corporate education programs.

   - Use budgetary incentives for colleges and universities to provide practical technical assistance.

   - Begin schooling by making available pre-school and latch-key programs for all students.

   - Experiment with change through pilot programs such as latchkey programs, contracting with industry, allow choice of education provides, relief from regulations, linkages with business, and establishment of new measurement criteria.

2. The states must move the concept of life-long learning form rhetoric to reality.

   How?

   - By making it easy for dropouts or others with inadequate competencies to reenter the educational system.

   - By removing barriers and providing incentives for people to participate in continual programs to gain training, upgrading, retraining.

   - By encouraging industry incentives such as promotions, release time, flex-time, availability of training, etc.

   - The state government should serve as a model employer.

3. Involve the public and private sector in a balanced sharing of responsibility.

   How?

   - By establishing a private sector council to help develop vision for a revised system, document private sector programs, and work as an equal partner with government on improving productivity.

   - By encouraging industry to participate in identifying and measuring core competencies.

   - By providing incentives for industry to contribute space, equipment, and expertise to worker-training programs.

   - By involving industry in the provision of opportunities for students to gain real world work experiences with training and education.

4. Encourage the coordination of state human resource policies.

   How?

   - By mapping the portfolio of human capital investments of both the public and private sectors.

   - By creating a human resource policy sub-cabinet consisting of directors of appropriate agencies and the presidents and superintendents of appropriate educational institutions.

   - By defining a comprehensive human resource policy and insisting that all state human resource proposals be reviewed for their consistency with the state human resource policy.

C. Why?

1. 80 percent of those who will be in the workforce in the year 2000 are already beyond school age.

   Yet in Colorado 99.9 percent of state funds go to children. If improved economic performance is a major priority for state and national economies and individuals' standard of living, then <u>somebody</u> has to provide basic education, retraining, and/or training for advancement to those 80 percent.

   Question: is this a responsibility for the state to provide or state to encourage private sector to provide?

2. Infrastructure today means people as well as physical and financial capacity.

   Yet today, training assistance is provided on the basis of need, not returns to the economy; on entitlements, not investments. Economists estimate that U.S. industry invests only about 1/10 as much in human capital as physical capital. In other countries we compete with, worker retraining is publicly and privately subsidized as an investment in human capital.

Question: What can and should governors do to make human capital investments by both public and private sectors as important as physical capital investments?

3. The educational system is out of whack.

   Children don't begin school until age 6 even though there is clear evidence that early childhood education significantly increases performance and reduces dropouts. Graduation is delayed until age 18 although mandatory attendance ends at age 16, encouraging incompletely educated dropouts. Skills, knowledge, behaviors demanded for work in school are increasingly irrelevant to those required for work in a job.

   Question: How should the system be restructured to meet real needs?

4. Now over half of state general fund expenditures, educational expenditures are close to, if not at, their limit. At the same time, there is little evidence that increases in spending have resulted in improved performance.

   The traditional educational reform "solution" is more money -- for special programs, centers of excellence, more qualified teachers, reduced class size, etc. Almost all accountability measures are based only on inputs, not results. Public institutions are shielded from the market forces of competition and choice. Yet all indications are that productivity is declining as expenditures increase.

   Question: How can productivity be measured and incorporated meaningfully in our education system?

D. Governors' Role

Despite the critical nature of the problem, most governors have little direct power over their state educational systems. In addition, corporate education, military training, and private sources are major educational providers whose role is not only uncoordinated but undocumented.

Governors can:

1. Articulate the problem, offer an alternate vision for a more effective system, and apply pressure for change.

   - Use speeches, conferences, etc. to draw attention to the need for restructuring.

   - Create private sector and/or state human resource councils to develop recommendations and commitments for action.

   - Modify the allocation of state education and training investments to get maximum economic benefits.

   - Introduce and/or support legislation to restructure the systems.

   - Use the JTPA to demonstrate creative programs.

2. Establish forums with business to:

   - Define and set criteria for needed workforce competencies.

   - Facilitate life long learning.

   - Develop ways for business to provide meaningful input to the system, including exposure of students and teachers to real business world needs, access to business expertise and up-to-date equipment, feedback on quality of students, assistance with job placement.

   - Encourage business to provide active oversight of quality of the outcomes and productivity of the system.

3. Set clear goals, with dates, for the education system to achieve regarding:

   - Changes in structure.

   - Changes in mission.

   - Improvement of accountability.

   - Increases in productivity: greater outcomes, less cost.

4. Direct WGA to provide further staffing on:

   - Research to describe the "portfolio" of education and training investments made by the private sector.

   - Research on how other countries meet education and apprenticeship needs.

   - Research on how to define and achieve greater productivity in education.

   - Research on alternative mechanisms for financing public and/or private sector investments in education and training.

   - Convening a private sector advisory group, perhaps jointly with US WEST or the Western States Strategy Center.

PREFACE

By Governor Roy Romer
State of Colorado

Western governors are faced with important choices as we work to increase the competitiveness of our economies. Our region has experienced a convergence of cyclical and structural changes to many of our major industries -- energy, mining, agriculture, forest products, manufacturing and related services have all had to make significant adjustments. We are striving to define a new vision for our states and for the West, a vision which embraces our unique heritage and environment and assures our citizens a high quality of life.

Our greatest resource in this endeavor is our people. The quality of our workforce absolutely will determine our success at competing in the world economy. We have to ensure that our workforce is prepared for a future consistent with our vision and our economic development strategies.

To ensure that all our citizens have the basic education and the specific skills to be qualified for jobs they are seeking presents our states with critical challenges:

- Our existing workers have special training needs. Some adults cannot find jobs because they lack basic literacy skills. Many workers have careers in industries which have declined and require retraining to enter new occupations. The age of our workforce is increasing and older workers are staying in or reentering the job market. Single parents and homemakers are entering the workforce in increasing numbers. A number of western states have significant growth in their minority populations, some of whom lack English proficiency. Indian tribes are seeking economic health for their reservations. More disabled people than ever are seeking employment. Specific programs must be designed to prepare these workers for the jobs

of today and the future.

- We must invest in our youth and encourage them to become the best they can be. They must stay in school and graduate, having mastered the basic competencies required by virtually all jobs. Unfortunately, a sizeable number of young people drop out before they receive the education they will need. Others graduate without having learned basic skills. Still others receive an education that barely can be deemed adequate by yesterday's standards and which will fall short in the future. We cannot "write off" this generation. We must have a system which encourages students to stay in school and entices those who have dropped out to return one day to the classroom.

- We may need to redefine our entire concept of "school." New technology allows students to learn anytime, anywhere and be taught by the best teachers in the nation. The process of grade-by-grade learning should be reexamined much as American industry has studied and restructured its traditional manufacturing processes. New demands for preschool and adult education, escalating costs in standard education, combined with already overcommitted state budgets, mandates that something must change. State-provided occupational education is a large piece of the system, but it must be considered along with the major educational investments by corporations, the military, communities, and private schools.

- We must consider the issues of vocational education and job training along with education reform, for these are the areas of education which are most immediately tied to the quality of our workforce and our ability to adapt within a changing, competitive world economy.

More of the same is not going to meet these challenges. Now is the time for governors to work closely with legislators, business leaders, educators, and community and labor representatives to ask ourselves: What kind of social and economic future will we create together in this state? What kind of

investments must we make in our current and future workers to help create this future? How should responsibility for these investments be allocated among individuals, employers, and the state and its taxpayers?

I recognize the limitations on governors in directing education and training reform, but we must continue to bring these issues to the attention of our citizens. The analysis and recommendations in this report on occupational education provide a vision of the kind of change -- ranging from incremental to radical -- that will be required. I invite everyone with a stake in a strong economy to join with my colleagues and me to develop ways to meet the challenges emerging in every state of this great region.

Contents

OCCUPATIONAL EDUCATION, ECONOMIC COMPETITION, AND THE WEST

ABSTRACT

The report is about occupational education -- job training and vocational education -- and economic competitiveness in the western states. Presently, the nation is engaged in a massive effort to recapture its economic preeminence. Many facets of public policy are involved, but most lie outside of the capacity of the states. Education is the manifest exception. Not only is education widely regarded as the route away from economic dolefulness, responsibility for it is constitutionally vested in the states.

Ironically, while governors are accountable for the state's economic stability, their formal capacities to exert direct influence over the public education system are singularly limited -- notwithstanding education's conventional linkage to economic development or the fact that it usually consumes upwards of half of the state budget. In each western state the chief school officers either are separately elected or appointees of state boards of education. In none does the governor have authority to appoint education executives, whether local or state, superintendent or college president.

Visionary leadership is more important in the education and economic development sectors, therefore, than perhaps any other aspect of state government. Assistance with vision formulation is a major aim of the report.

Education is like a continuum, and it is difficult to establish precise boundaries between sectors and programs. Vocational education cannot be considered outside of its public school context, and it is impossible to consider any feature of the schools without reference to the national concentration on school reform. Because of these things, the primary contents of the report spill over onto aspects of the educational system not normally considered occupational.

Work and schooling always have been linked in the national culture as part of the conventional wisdom. What is new and promising is the nature of the current inquiries, which reveal proactive contemplation rather than reactive motion. Equally different is the depth to which these explorations are seeking more precise explanations and solutions than ever before.

A growing conviction is emerging that the association between education and the work place must be close and mutually supportive. If

education by itself is not the full answer, it is an essential ingredient of all others. Not only will Americans improve their economic advantage if they properly restructure their educational system, they are relegated to a dismal future characterized by a spiraling downward standard of living and economic stagnation and decay if they do not.

While most observers correctly note the existence of a lackluster educational system and relatively diminishing competitiveness and agree on the existence of a positive correlation between effective education and resourceful human capital, the connections between the two are more often assumed than displayed.

There also is the possibility that in focusing on economic and occupational elements the enormously more important relationship between an effective educational system and the political system will be ignored. Yet, to minimize the connection between education and enlightenment is to enhance the possibility that the nation will achieve its economic goals at the cost of its political values.

In fact, both the civic and the economic purposes of education require attention. The educational program must display a balance; it must be designed to educate students both for social involvement and economic participation. These assumptions guide the character of the present report.

National economic conditions are changing. The economies of all of the free industrialized nations now are interrelated. Goods and services travel with minimal resistance around the world, and their prices are determined by international rather than national markets. Trade presently accounts for a larger fraction of the American GNP than ever. World capital and consumer markets are integrated.

The effects are intensified by the accelerating rate of technological change. Modern aircraft, transistorized radios, computers, kidney dialysis machines, ultra-light sailboats, German and Italian specialty cars, and video disks represent innovations that increase in number more rapidly than lists can be prepared to arrange them, industries organized to produce them, or educational programs established to prepare workers to function within them. Nevertheless, the more sophisticated the technology, the more important become human intellectual and judgmental skills and initiative.

These needs are compounded by the fact that in this and other economically advanced nations, the provision of services has displaced the production of goods as the nation's principle economic activity, and economic growth has come to depend more than ever before on human rather than physical capital. The skill, dexterity, and knowledge of the population are the critical aspects of human capital, and all fall within the province of education.

The nation is approaching an educational crisis of epic proportions. Its educational processes are no longer congruent with its economic needs. Briefly put: an educational

system structured to meet obsolete work force requirements cannot fulfill an expressly different need. If prevalent assumptions about the future are correct, the form and nature of the educational system are becoming as irrelevant as the nation's outmoded industrial processes. This will become increasingly apparent as society attempts to meet calls for graduates possessing critical thinking capabilities, adaptivity, and literacy -- people prepared to work in a new setting -- discovering in the process that its educational tools are hopelessly antiquated.

At least two ramifications are apparent. First, present economic dynamics stimulate needs for skilled people with the capacities to work in highly flexible industrial environments. This places unprecedented emphasis on the more universal aspects of educational preparation, on the core competencies, and reduces requirements for occupationally-specific preparation in most fields. At best, school-based programs only can qualify people for entry. Job-specific training usually is best acquired on the job. It is the qualifying requirements that are undergoing change. Second, because of this it is increasingly difficult to view a particular place on the educational spectrum as the place where vocational or occupational education is "done." With the new focus on essential competencies, all education is involved. The report's conclusions reflect this:

> The entire educational network must be utilized in the quest for economic sufficiency. This means that students should be able to move in and out of the public and private sectors without significant barriers. It also means that business-based programs, proprietary schools, military education, and other educational sectors must be factored into the equation.
>
> All of public educational sectors, programs, and curricula must be fully interrelated. Public education should be a single integrated system, a seamless tapestry, through which students may move without serious interruptions, distractions, or disjunctions, and in which educators interact with others at all levels as peers.
>
> Occupational education programs are directed to preparation for work, but the circumstances of each form vary: vocational education in the secondary schools is widely castigated, and its future, at least in the comprehensive high schools, is problematic; in the postsecondary sector it is widely lauded, and the more prevalent calls are for its expansion.

Equity and changing demographics require expanded and improved educational opportunities for all Americans. This means better systems for addressing the educational needs of individuals, and it means access to those systems for all. All, in this case, applies not only to racial and ethnic minorities but to such other disfranchised groups as the disabled.

Economic competitiveness requires that the traditional separation of governmental economic and social policies be reduced. There must be a new emphasis on human resource development, and all relevant educational and governmental sectors and policies must be assembled to that end. Similarly, industry must be fully involved with education in the educational improvement process. This requires participation, and it requires contributions in the form of energy, expertise, and physical resources.

The states of the region must strive to move the presently rhetorical expression, "A Learning Society," into reality.

Finally, educational change is costly, and it does not come easily. Comprehensive restructuring, therefore, must be considered more in the form of a vision, or a concept than as a series of specific implementation schedules and detailed fiscal estimates. Pilot programs, experimentation, and the application of levers at sensitive points describe the most promising steps.

While the focus of the report is on occupational education, those services are inextricably located within the larger educational system. Thus, changes directed only to the occupational education sectors without concern for their larger setting would portend only marginal change. A fundamental restructuring of the educational system is required.

The report's proposals are presented accordingly. They are organized under six central themes, each encompassing more specific recommendations:

An integrated Human Resource Policy framework should be established and maintained in each state through a state-level human

periods of isolated elements.

Graduation requirements should be stated in terms of core competencies rather than seat time indicators. They should be supported by specific competency objectives that are operational and the achievement of which can be measured.

Core competencies should include effective communication skills, knowledge of American and other civilizations and governments, facility with a foreign language, computation skills, understanding of geography and national and international economics, a grounding in the natural sciences, appreciation of the arts, and job acquisition and retention and entrepreneurship skills. A related goal should be the creation of a continuing interest in lifelong learning.

The school goal should be accomplishment of these core competencies by the end of compulsory attendance age -- age 16, and all school programs should be directed to that objective.

The final two years of high school should be devoted to advanced academic work coordinated with higher education or technical or occupationally-oriented studies integrated with relevant postsecondary programs in "2+2 program" configurations.

As a general rule, vocational programs, especially those leading to job-specific skills in the health, trade and industries, and technical fields, should be phased off the comprehensive high school campus.

Industry, education, and government collaboration must be increased. Business must become more fully involved throughout the educational cycle.

Employers should be invited to participate with educators and representatives of the general public in competency identification and measurement efforts.

resource council created for this purpose by the governor.

The council should be composed of chief executives of relevant state departments, divisions, agencies and educational institutions.

State human resource planning should occur within the context of this policy.

All educational resources must be utilized in the quest for improved economic competitiveness.

Public educational sectors, programs, and curricula must be more fully interrelated.

Choice must be a prominent feature, and vouchers should be used to efficiently expand the range of educational options.

Vouchers also should be made available to students beyond compulsory attendance age who drop out of high school so they may return at a later time to complete their high school program or vocationally-oriented training.

The feasibility of state contracts with industries for training services also should be explored.

Employers that offer basic job training, remedial education, or education that otherwise expands the general qualifications of their workers should be given incentives and compensation in the form of tax credits for these services.

Tax credits should be extended to industries that donate, loan, or share equipment and work places for educational purposes.

The educational system must be restructured.

One goal should be more flexible, team-centered, building-based decision processes in the schools.

Another should be elimination of scheduling programs that separate learning into daily

In each state there should be cooperative demonstration programs, state vocational equipment pools, demonstration centers for the retraining of dislocated workers, model centers for vocational education for older workers, and industry-education partnerships for training in hi-tech occupations.

Prospects for Lifelong Learning must be enhanced. The states of this region must strive to move the presently rhetorical expression, "A Learning Society," into reality.

Attention should be directed to such incentives as released work time, organizational recognition, salary increases, promotions, and others, as inducements for employees to partake of these services.

Similarly, scheduling changes need to occur in the work place to encourage the continued presence or the return of older workers.

Present assumptions that publicly funded educational services after high school be need-based should be re-examined.

Consideration should be given to a stronger involvement of government in the funding of adult education, training, and retraining programs. Other possibilities, such as payroll and employment compensation tax deductions, and employee training accounts as ways of funding adult education also should be considered.

Greater consideration should be given to the use of tax credits for workers who pursue recurrent educational programs .

Equity requires expanded and improved educational opportunities for all Americans. This means better systems for addressing the educational needs of individuals, and it means access to those systems for all. All, in this case, applies not only to racial and ethnic minorities but to such other disfranchised groups as the disabled.

These recommendations are amplified in the full report. Again, many extend beyond the normal boundaries of occupational education. This is inescapable, since all aspects of education are related, but they call for a comprehensive attack, and they are presented as a feasible program that can succeed.

OCCUPATIONAL EDUCATION AND ECONOMIC COMPETITION IN THE WEST

"Most education reform to date has focused on issues related to student and teacher performance in K-12 schools. While such reforms are a necessary first step, education and training efforts must be extended to retraining the adult work force and improving adult literacy."

SRI International, *Global Competition and the Western States*

Separation of powers is the most vivid feature of the American political system. The arrangement of checks and balances exemplified by the national Constitution ventures close to the extreme at the state level, where not only are the three branches of government divided, but the executive powers themselves are dispersed among elected or selected treasurers, attorneys general, school superintendents, auditors, public land commissioners, and others.

Although the President of the United States is the unmistakable national executive with plenary executive power, governors stand at the pinnacle of a noticeably stunted hierarchy, perhaps first among equals but nonetheless sharing administrative authority with other officials whose names appear on the long ballot or whose appointments are in the hands of boards or commissions.

The resultant distribution of functions does not reduce civic expectations. Governors are expected to ensure the economic well-being of the state, and when things do not go well economically, it is to the governor that the electorate first turns for an accounting.

The nation presently is engaged in a massive search for the means to ensure its continued economic preeminence. While most aspects of the economic system are more within the province of the national government than the states, education is the manifest exception. Not only is educational excellence widely regarded as *the* solution to economic dolefulness (a bit too hopefully), responsibility for it is clearly and constitutionally vested in the states.

At this point a paradox forms. Governors are the officers most responsible for their state's economic stability. Although

education is vital to that, as a rule they have little direct influence over the state educational system, whether K-12 or college and university. In every western state the chief school officers either are separately elected or appointees of state boards of education. While governance patterns vary, in no western state does the governor have authority to appoint education executives, regardless of whether they are superintendents or college presidents.

In half the western states, the state school chiefs are separately elected. In the other half they are appointed by state boards of education, the members of which in all but two states are elected. The exceptional two emulate the higher education model, with gubernatorial appointed board members and board appointed executives. In these two cases the top school officials also are outside the direct control span of the state's chief executive.

Thus, governors' formal capacities to exert direct influence over public education are singularly limited. They can propose legislation, but they cannot enact it; they can exercise their veto, but they cannot statutorily mandate; they can persuade education officials, but they cannot order them. Once the state appropriations bill is signed -- and education usually comprises upwards of half of a state budget -- a governor's authority in education increasigly depends on the ability to get the proper people to see the light.

Because of these circumstances, visionary leadership is more important in the education and economic development sectors than perhaps any other aspect of state government. Assistance with the vision is the modestly presumptuous aim of this report; it is submitted respectfully.

Economic issues have been an important concern for the WGA for several years. At their 1986 annual meeting, the western governors adopted a resolution noting that because of the region's location and its technology and resource-based economies, it must adapt to changing international trade patterns. To that end, the resolution called for the development of strategies in three key areas: Education, Rural Development, and International Trade.

With respect to Education, the WGA staff subsequently consulted with people around the country and convened an advisory committee to provide recommendations on the most pertinent areas of inquiry. In the spring of 1987, public education seemed in danger of being studied to death, and it was important not to merely repeat what had been done elsewhere.

The unanimous advice was to focus on vocational education, an area largely overlooked in the school reform movement, and which was called the "Dark Continent of American Education" (Incidentally, the plethora of materials assembled during the ensuing peregrinations associated with the development of this report belies this impression.) Vocational education also was considered the educational sector most directly linked to economic development. Thus, a decision to concentrate on it proved irresistible. As advisors began pulling the vocational education string, job training appeared and was added.

The study accords with the priorities of WGA Chairman, Governor of Washington Booth Gardner and his "Campaign for Competitiveness." Thus, a proposal for a study was adopted by the western governors

at their 1987 annual meeting. Governor Roy Romer of Colorado was designated lead governor for the project. Lewis J. Perelman was commissioned to conduct a separate but related inquiry into state investments in human capital for economic development, using Colorado as a case study. His report on the learning enterprise in Colorado is a companion study to the present report.

This report is the product of an extensive process. Substantial effort has been devoted to the review of papers, reports, articles, monographs, and books, most of which were provided or recommended by people contacted in all of the western states for relevant information and materials. A considerable amount of time was spent with officials and people associated with various national agencies and vocational education organizations in the nation's capital, including the General Accounting Office (GAO), Department of Labor, the National Assessment of Vocational Education (NAVE), the American Vocational Association (AVE), and the National Association of State Directors of Vocational Education (NASDVE). This was followed by a visit to Columbus, Ohio and the National Center for Research in Vocational Education at Ohio State (NCRVE -- which may or may not be in the process of moving to a consortium centered at the University of California at Berkeley, also the site of another extensive series of interviews).

Additional time was spent in the West, as Colorado, North Dakota, Washington, Oregon, Nevada, California, and Utah were visited. The Oregon visit also included several hours at the Northwest Regional Educational Laboratory in Portland. The Nevada visit coincided with the 1987 annual meetings of the American Vocational Association and the National Association of State Directors of Vocational Education. Similarly, the topic was discussed as part of recent meetings on rural development in North Dakota, Idaho, and Wyoming.

These references to states and offices do not do justice to the many cities -- Denver, Salem, Olympia, Portland, Seattle, Berkeley, Los Angeles, Casper, Sacramento, Salt Lake City, Bismarck, Ft. Ft. Collins, and others -- or to the more extensive listing of schools, centers, colleges, agencies, associations, or to the still longer lists of people visited. If these colloquies did not fully encompass the field, they at least provided a flavor. And if it is not feasible to identify and express appreciation to each person here, it is possible to convey a sincere if general expression of gratitude and note that every encounter was positive, informative, and exceptionally friendly.

The report is based on all of this. It commences with a few general observations, followed by a survey of some of the more apparent economic and demographic trends affecting this country and region, and which convey expectations -- if not always clearly -- about education. This is followed in turn by a review of the occupational education resources available to the states. The report concludes with a series of recommendations that in the aggregate describe what some may consider a vision of a restructured education system.

Finally, this study is one product of the controversy about the roles of the schools that has accompanied vocational education's creation and growth from the beginning. Some appreciation of that fact is important to an understanding of the subtle-

ties of the issues that inhabit the realm. Ogden Nash's implicit admonition respecting the importance of history comes to mind:

> *"God in his wisdom made the fly*
> *And then forgot to tell us why."*

Vocational education in America is controversial. Nevertheless, this assessment commences with no deeply imbedded presumptions about the inviolability of present ways of providing it in the public schools. It also starts with no ingrained perceptions favoring academics. The only assumption is that while there are examples of truly excellent vocational and training programs, the universality and persistence of criticism provide more than reasonable evidence that all is far from right with vocational education, particularly at the secondary level. There must be change.

The WGA has sponsored the development of this report, and it is to be hoped that the observations, conclusions, and recommendations it contains will be of help to the governors of the sixteen states who comprise the organization's membership. The opinions herein are based on what is earnestly believed to be a thoughtful review of the extant material on vocational education and job training, but they are the views of this writer -- nothing more, nothing less.

William Chance
WGA Scholar-in-Residence, 1987-88
Olympia, Washington
June, 1988

GETTING STARTED

> *"Even if America were to devote more resources to education, simply more of the same would not prepare its youth for roles in flexible-system enterprises. At best, the current system of education prepares young people for preexisting jobs in high-volume, standardized production. Some students are sorted into professional ranks and trained in the manipulation of abstract symbols. Others are prepared for lower-level routine tasks in production or sales. Few students are taught how to work collaboratively to solve novel real-world problems -- the essence of flexible system production."*
>
> Robert Reich, *The Next American Frontier*

The Importance of Balance. This report is about occupational education -- job training and vocational education -- and its relationship to the future economies of the western states. "Occupational education" is an cumbersome expression, but no other seems to work. "Vocational education" does not adequately describe retraining and continuing education for adults, nor does it incorporate programs in industrial settings. "Job Training" does not sufficiently describe what is going on in the high schools. Treating the two together is more analogous to the variety of fruits in a holiday basket than to a simple mixing of apples and oranges.

Occupational education is a cumbersome term, but no other seems to work.

The separate emphases of vocational education and job training -- secondary schools versus postsecondary institutions, adolescents versus adults, pre-employment versus post-employment, daytime versus evening, classroom versus work site,

compulsory versus tuition based, and so on -- invoke distinctions that outweigh the similarities.

Vocational education, here referring mainly to the secondary school level, kindles issues of educational purpose, quality, and effectiveness. Job training, here referring mainly to services offered to adults, elicits concerns about sufficiency, duplication, and relevance.

Virtually every aspect of secondary vocational education is affected by its presence in the public school program, a place where it has never been fully accepted. Almost 100 years after the seminal debates over the purposes of the public schools that accompanied the advent of public education in this country, secondary vocational education still is plagued with doubts respecting its probity, relevance, and worth. Many believe it can be little more than an alternative option for less motivated or engaged students, and a smaller but at least as vocal number feel it should have no place in the high school, period. In all sectors, widespread doubts surround the need, effect, and desirability of vocational education in the public schools.

Many believe secondary vocational education can be little more than an alternative option for less motivated or engaged stuents, and a smaller but at least as vocal number feel it should have no place in the high school, period!

These misgivings are met by the opinions of an equally committed group of supporters, the members of which insist that the secondary programs are appropriate and effective, and that they represent a vital alternative for students who have little interest in academics and who otherwise immediately would depart the premises.

Few of these controversies attend the postsecondary sector, where programs are directed to adults of post-high school age who may be seeking pre-employment skill training, continuing their education, dislocated by the shifting fates of industrial destiny, or changing careers of their own volition. While it is impossible to consider secondary vocational education outside of the school setting and without consideration of the developmental meanderings of American public education, neither of these bear much immediate relevance for programs directed to adult students. At the same time, as different as they are, the two sectors loosely combine under the present national preoccupation with the economy and the well-being of this society as it approaches the 21st century. In recent years this concern has had inspirational effect. With respect to the common schools, where can one find a more riveting expression of education-economic interdependence than in the opening

lines of the National Commission on Educational Excellence's report, *A Nation at Risk?*

> *"Our nation is at risk. Our once unchallenged preeminence in commerce, industry, science, and technological innovation is being overtaken by competitors throughout the world. This report is concerned with only one of the many causes and dimensions of the problem, but it is the one that undergirds American prosperity, security, and civility. We report to the American people that while we can take justifiable pride in what our schools and colleges have historically accomplished and contributed to the United States and its people, the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people. What was unimaginable a generation ago has begun to occur -- others are matching and surpassing out educational attainments"*

Work and schooling have become so linked in the national culture that the connection now is part of the conventional wisdom. What seems to be new and promising is that the current inquiries display more proactive contemplation than reactive motion.

And while the rhetoric may be a bit less fervent, *WorkForce 2000* conveys an equally compelling message for the post-high school sectors:

> *"As the economies of developed nations move further into the post-industrial era, human capital plays an even more important role in their progress. As the society becomes more complex, the amount of education and knowledge to make a productive contribution to the economy becomes greater. A century ago, a high school education was thought to be superfluous for factory workers, and a college degree was the mark of an academic or lawyer. Between now and the year 2000, for the first time in history, a majority of all new jobs will require postsecondary education. Many professions will require a decade of study following high school, and even the least skilled jobs will require a command of reading, computing, and thinking that once was necessary only for the professions."*

For the last half dozen or so years, the economic imperative has aroused national consternation, and it has formed the theme of the clarion call. It also has operated as an important value in its own right, reflecting deep uncertainties over the

nation's shifting role in world markets and the search for solutions -- always leading back to the schools -- that may help stabilize, reverse, or capitalize on what for many Americans are deeply disturbing trends.

Work and schooling have become so linked in the national consciousness that the connection is now part of the conventional wisdom. What seems to be new and promising is that the current inquiries display more proactive contemplation than reactive motion. Equally different is the depth to which the present explorations are probing the relationship, seeking more enduring explanations and solutions than ever before.

Balance is important. In focusing on the economic and occupational dimensions, the enormously more important relationship between an effective educational and political system -- the crucial need for educated participants in the electoral and political processes -- can be diminished.

A growing conviction is emerging that the association between education and the work place must be closer and more mutually supporting than has been the case. If education by itself is not the answer, it must be an essential ingredient, the *sine qua non* of all the other strategies. Not only will Americans improve their economic advantage if they properly restructure their educational system, they are relegated to a dismal future characterized by a spiraling downward relative standard of living and economic stagnation and decay if they do not.

Yet, while most critics note the existence of a marginally effective educational system and relatively declining American industries and agree on a positive correlation between effective education and resourceful human capital, the connections between the two are more often assumed than displayed. Neither the magnitude nor the nature of the linkage between the education system and economic vivacity are widely understood. Nor is the null often considered: while education is promoted as the most feasible path to economic salvation, few suggest that it is responsible for the relative decline of the American steel or auto industries. Education had little more than circumstantial bearing on the 1987 stock market decline. It also has little to do with the fluctuating rate of the dollar in world currency markets or the relative percentage of research and development devoted to defense in this country. When one thinks about it, a great deal that is going on economically does not directly involve education.

In this country the economic and social sectors traditionally have been kept separate. Now that separation is palpably diminishing as states seek ways to fully mobilize their human resources.

Thus, it would be presumptuous to assume that an improved education system *alone* will bring the nation out of its economic doldrums or take it to new levels of international dominance. And it would be a mistake if the emphasis on educational change were to mesmerize the public and divert attention from other equally important changes in economic, defense, and

social policies that must transpire if American prominence in the global economy is to continue.

There are two messages here. The first requires attention to substance rather than shadow. In the main, economic problems will require economic solutions. The second involves the opportunities the economic emphasis creates to make education better. If education's potential for economic enhancement can be kept in perspective -- if too many straws are not loaded on this camel -- all of this activity and interest could lead to something exciting.

Most observers agree that America's future depends on the quality of its work force. "Lifelong learning" is an expression added to the national vocabulary long ago, but examples of its presence are far from common.

Balance is important in other ways as well. In focusing on the economic and occupational dimensions, the enormously more important relationship between an effective educational system and the political system -- the crucial need for educated participants in the electoral and political processes -- can be diminished. Yet, this nation's only defense against the effects of rampant ignorance on the civic culture is the somewhat less than reassuring evidence that the uneducated participate in the political process at a lower rate than the educated. This rickety bulwark could promptly collapse before a determined assault of demagoguery or a sustained major downturn in the economy. To minimize or ignore the connection between education and enlightenment is to enhance the possibility that the nation could achieve its economic goals at the cost of its democratic values.

In fact, both the civic and the economic purposes of education require attention. And logic suggests a balance -- the goals should be to educate students both for community participation *and* for economic involvement.

With the present attention to academic skills and the reasonable assumption that literacy is a requirement for effectiveness in the social and the work place, contemporary school reformers assume this is happening -- that such a balance is forming. Perhaps it is; perhaps it is not.

One purpose of this review is to consider that. In that respect, more needs to be known about the nature of the impending economic future and about the necessary combination of work place competencies that will help shape it. From that evidence, inferences might be drawn about what will be required in the form of educational programs and services, and from that, new emphases, collaborations, associations, and structures can be identified.

Harmonious Economic and Social Policies. At least two arenas -- what Disneyland Imagineers call "venues" -- are occupied in this nation's rush to the 21st century. The first is the economic realm, influenced by a nearly irresistible international movement to a fully integrated global economy, greater competitiveness, a new emphasis on service industries, progressively increasing technological advances, and a significantly changing work place.

These requirements impel social changes in the form of requirements for more effective education and training programs and policies promoting accessibility, incentives, and partnerships among government, industry, and the worker.

"Education Reform" has been a catch phrase for a half dozen or more years, but so far little fundamental *altering has occurred.*

In this country the economic and social sectors traditionally have been kept separate. Now that separation is palpably diminishing as states seek to fully mobilize their human resources (their "human capital") and in the process come to the realization that economics and politics should be mutually supporting, that government and business should be working together. Hence, new associations among government, education, and business are forming. Publicly-funded programs providing firm-specific worker training and formalized state economic development programs paid for from earmarked sources are two conspicuous examples of this.

Even so, the going is slow. Distinctions between the economic and social spheres have been part of the national history, and they linger. Eligibility for publicly supported health, education, and welfare programs are linked to poverty and tied therefore to all the cultural inferences about failure that poverty evokes. The aspects of education most crucial to the maintenance of worker competence -- worker training and retraining -- are detached from the nation's economic goals. Conventional claims about the necessity of relevant and effective educational and training programs are familiar to all, but the governmental message on worker training and retraining is too often expressed as little more than calls for industry to encourage it and worker responsibilities to seek and pay for it.

The "propriety" of an effective role for government remains an issue, and assertive projects that could lead to substantial increases in participation are prominent by their absence.

Most observers agree that America's economic future depends on the quality of its work force. "Life-long learning" is an expression added to the national vocabulary long ago, but

examples of its presence are far from common. Thus, there is a basic inconsistency between this value and the continued treatment of adult education, especially requirements that continuing education and worker retraining programs be self-sustaining or need based. At least it suggests something less than aggressive resource mobilization.

Simply stated, the United States does not have a comprehensive economic development-education and training strategy; nor does it have an integrated human resource program. Neither do the states. In the new era of international competitiveness, where success can hinge on marginal differences in worker competence, these policy vacancies are luxuries neither can afford.

The reforms have not yet taken the states to fully articulating educational systems. They have not extended to curricular integration, either vertically -- between the high schools and colleges, or horizontally -- between courses, programs, and tracks at the same grade level. They have not sufficiently addressed the preparation and continuing education of teachers, academic or vocational.

Whatever else, such policy neutrality stands in stark contrast with the role of governments vis-a-vis their human resources and industries in America's competitor nations, many of which consider worker training and recurrent education programs vital to the maintenance of a productive work force. Cultural comparisons can be risky, but West Germany offers adults up to two years of full-time training and retraining, with the government paying training costs and an income subsidy. Most who avail themselves of this opportunity are already employed; few are destitute. Other continental European countries provide workers with vouchers that can be used for on-the-job training.

American approaches to these things will have to change if this country is to compete effectively with nations that do not stress a distinction between individual and social responsibilities when it comes to education. If the subject is "leveling the playing field," this is the first place to shim.

Rising Educational Expectations. Finally, while much of the schools' role vis-a-vis the work place heretofore has been pedestrian -- providing more or less moderately qualified people for the mills and factories, now it seems that both the quality and effectiveness of American industry are absolutely dependent on the quality and effectiveness of the educational and training programs that prepare people to function within it.

Economic shifts stimulate needs for skilled workers in evolving traditional fields while also calling for workers with the capacities to function in new highly flexible industrial environments.

Eighty years ago the nation assumed a classical education (one some now would label academic) was of little utility to the general population, most of whom would never continue to college. Thus began America's 20th century quest for practicality

in education, an adventure that led to a mid-twentieth century enchantment with relevance and a curriculum for most students that was virtually devoid of anything academic, theoretical, or challenging.

Presently, academics in the secondary schools are proclaimed. Responses have assumed the form of high school curricula heavily weighted with graduation requirements accentuating English, mathematics, science, and social sciences.

The emphasis is laudable, but just as before, the listing of critical courses is influenced by assumptions about still nebulous images of newly forming work force requirements. Once again they are contributing to a dialectic in which academic and vocational alternatives are rendered mutually antagonistic.

Neither is the issue: rather, the problem is pedagogical structures that separate the practical from the theoretical, limit learning to specified amounts of time and carefully segregated subjects, divide the system into insulated sectors, and create divisiveness that draws educators into perceptively calcifying groups.

Public education should be a single coordinated system through which students should be able to move without serious diversions and in which educators interact with others at all levels as peers.

"Education Reform" has been a catch phrase for a half dozen or more years, but so far little fundamental altering has occurred. The educational system still functions much as is did when its processes were more in alignment with the demands of a goods-producing economy and the new jobs were in agriculture, manufacturing, and mining. Most responses to the new economic demands are answered incrementally, as the system clings to a model keyed more to historical production dynamics than to the demands of international competition.

The industrial sector is changing. The most popular prophecy envisions a shift in emphasis from a resource extraction to an information and service oriented system, with much of the economic growth expected to occur in technologically-related enterprises. Yet, too many of American education's guiding conceptions still relate to economic aspects that are relics of an earlier time.

If prevalent assumptions about the future are correct, the existing form and nature of the educational system soon will become as irrelevant as the nation's outmoded industrial sectors. This will become increasingly apparent as society struggles with antiquated educational tools to meet calls for graduates possessing critical thinking capabilities, adaptivity, and at least some

literacy -- people prepared to work in new settings; people with intellectual skills who can read and write.

For present purposes it is sufficient to note that in both the past and present contexts the economic influence has been strong. It was an economic force that supported curricula weighted toward social relevance and away from academic irrelevance during the first seventy years of the present century. It is a subsequent series of economic reactions centering on the quality of education, its relationship to a different kind of economic growth and development, and corresponding anxieties over the nation's international standing that stimulate and shape the educational struggles of the seventies and eighties. These evolving expressions of economic determinism parallel the shift from a national to a global economy.

A Different Conception. As progress is pondered, the natural question is whether today's reform trains are on the right track. Having agreed that improvements are in order, are those presently contemplated likely to prove consistent with emerging national economic and social demands?

The natural question is whether today's reform trains are on the right track. The answer must be highly qualified.

The answer must be highly qualified, with the qualifications stemming first from the realization that there remains a long track to travel, and second from the impression that while the reforms are well-intended, they are confined by the limits of the old matrix, the old structure -- additional academic course and time requirements are being squeezed into a restricted number of cells, sometimes filling vacancies, more often displacing electives. The changes have been addressing a limited range of surface matters, and if that is as far as they go, they will not be enough.

The reforms have not yet taken the states to fully articulating educational systems.

The reforms have not yet taken the states to fully articulating education systems. They have not extended to curricular integration, either vertically --between the high schools and the colleges, or horizontally -- between courses, programs, and tracks at the same grade level. They have not sufficiently addressed the preparation and continuing education of teachers, academic or vocational.

There is much more they have not done, but these are subjects for later. For now, the reforms are entering the period of the second wave, although the wave metaphor is a poor one if it is recognized that the sources of the changes of the eighties are the accountability measures of the seventies, based in turn on the reactions of the sixties, and so on. The waves are sequential, and

the current is continuous. It would be better to think of stages, each building on the others until a synchronized, productive, and effective educational system is realized.

Whatever else, it is evident that the messages from the economic sector will grow more strident until an acceptable response in the form of a sufficiently educated population and work force is achieved. Over the long run, this will require educational system restructuring as profound as the present economic restructuring: it will require a fundamentally changed educational matrix.

Whatever else, it is evident that the messages from the economic sector will grow more strident until an acceptable response in the form of a sufficiently educated population and work force is achieved.

Regardless of the comfort level with the economic connection, its presence will keep the window of opportunity for educational change open much longer than first thought. For better or worse, educational improvement and America's economic future have been linked in the national consciousness. Ineluctably, as long as other nations dog this one in the international economic race, attention will return to the educational realm.

This review of occupational education unfolds in such a context: with an awareness of at least the general form of the emerging global economy, an appreciation of the significance of the educational re-examination now underway, some understanding of the historical relationship between the schools and the work place, and a desire for greater public policy capacity.

It begins with a few assumptions about the scope and direction of inquiry, including the following:

The structure of the economic system is changing both in terms of its emphasis and in terms of its operation. Production processes based on the reduction of work to its basic components are being replaced by new systems that stress flexibility, teamwork, change, adaptivity, and decentralized decision-making. The public educational system, designed at an earlier time and structured along now outmoded production process principles, functions in a manner that is increasingly incongruent with its social and economic environments. The educational system must be restructured.

Two over-arching ramifications can be discerned. First, economic shifts stimulate needs for skilled workers in evolving traditional fields while also calling for workers

with the capacities to function in new highly flexible industrial environments. Each places unprecedented emphasis on core competencies. Second, it is increasingly difficult to separate education into discrete academic and applied tracks, or to view a particular place on the educational spectrum as the point at which vocational or occupational education is "done." Essentially, all of education is involved.

Occupational education programs ostensibly involve preparation for work, although their circumstances vary: secondary vocational education is inculpated by issues associated with basic skills and educational purposes, and its future, at least in the comprehensive high schools, is problematic; at the postsecondary level the issues center on relevance to the employment market, duplication, and coordination. Vocational education in the common schools is castigated; in the postsecondary sector it is lauded. In the former there are demands for its elimination; in the latter there are calls for its expansion.

The entire educational network should be utilized in the quest for economic sufficiency. This means that students should be able to move in and out of the public and private sectors without significant barriers. It also means that business-based programs, proprietary schools, military education, and other educational sectors must be added to the equation.

All of public educational sectors, programs, and curricula must be interrelated. Public education should be a single coordinated system through which students could move without serious interruptions, diversions, or disjunctions, and in which educators would interact with others at all levels as peers.

Equity and the changing demographic outlook require expanded and improved educational opportunities for all Americans. This means better systems for addressing the educational needs of individuals, and it means access to those systems for all. All, in this case, applies not only to

racial and ethnic minorities but to such other disfranchised groups as the disabled.

The separation of governmental economic and social policies must be reduced. There needs to be a new emphasis on human resource development, and presently separated but related sectors and policies must be integrated to that end. Similarly, the industrial sectors must be fully involved with education in the school improvement process. This requires participation and contributions in the form of energy, expertise, and physical resources.

This nation and region must strive to move the presently rhetorical expression, "A Learning Society," into reality.

Educational change is costly, and it does not come easily. Thus, comprehensive restructuring needs to be considered more in the form of a vision or plan than as a series of specific implementation schedules and detailed fiscal estimates. Pilot programs, experimentation, and the application of levers at sensitive points describe the most promising steps. With discussion, experience, involvement, commitment, and time, the system can be changed.

The conception of a responsive educational system advocated here is organized around six central themes, each encompassing several more specific recommendations:

An integrated Human Resource Policy framework should be established by a state-level human resource council created for this purpose by the governor. The council should be composed of directors of relevant state departments, divisions, agencies and educational institutions. State human resource planning should occur within the context of this policy.

All educational resources should be utilized in the contest for improved economic competitiveness. Public educational sectors, programs, and curricula must become more fully

interrelated. Choice is essential, and vouchers should be used to expand the range of educational options; they also should be made available to students beyond compulsory attendance age who drop out of high school so they may return at a later time to complete their high school program or a vocational-oriented training. The feasibility of state contracts with industries for training services should be explored. Employers that offer basic job training, remedial education, or education that otherwise expands the general qualifications of their workers should be given incentives in the form of tax credits for these services. Tax credits also should be extended to industries that donate, loan, or share equipment and work places for educational purposes.

The educational system should be restructured. One goal should be more flexible, team-centered, building-based decision processes in the schools. Another should be elimination of scheduling programs that separate learning into daily periods of isolated elements. Graduation requirements should be stated in terms of core competencies rather than seat time indicators. Core competencies should include effective communication skills, knowledge of American and other civilizations and governments, facility with a foreign language, computation skills, understanding of geography and national and international economics, a grounding in the natural sciences, appreciation of the arts, and job acquisition and retention and entrepreneurship skills. A related goal should be the creation of a continuing interest in lifelong learning. As a general rule, vocational programs involving job-specific skills in the health, trade and industries, and technical fields should be removed from the comprehensive high school campus and replaced with more general vocational and other studies that are coordinated with occupationally-specific programs in the community colleges and vocational centers.

Industry, education, and government collaboration should be expanded. Business must become more fully involved throughout the educational cycle. Employers should be invited to participate with educators and representatives of the general public in determining competency standards and appropriate measurements. There should be cooperative demonstration programs, state vocational equipment pools, demonstration centers for the retraining of dislocated workers, model centers for vocational education for older workers, and industry-education partnerships for training in hi-tech occupations.

Prospects for Lifelong Learning must be enhanced. This nation and this region must strive to move the presently rhetorical expression, "A Learning Society," into reality. Attention should be directed to such incentives as released work time, organizational recognition, salary increases, promotions, and others as inducements for employees to partake of these services. Similarly, scheduling changes need to occur in the work place to encourage the continued presence or the return of older workers. Present assumptions that publicly funded educational services after high school be need-based should be re-examined. Consideration should be given to a stronger involvement of government in the funding of adult education, training, and retraining programs. Other possibilities, such as payroll and employment compensation tax deductions, and employee training accounts as ways of funding adult education also should be considered. Greater consideration should be given to the use of tax credits for workers who pursue continuing and recurrent educational programs.

Finally, equity requires expanded and improved educational opportunities for all Americans. This means better systems for ad-

> dressing the educational needs of individuals, and it means access to those systems for all. All, in this case, applies not only to racial and ethnic minorities but to such other disfranchised groups as the disabled.

Many of these recommendations extend beyond the normal boundaries of occupational education. This is inescapable, since all aspects of education are related, but they call for a comprehensive attack, and they are confidently presented in the belief that they represent a practical program that can succeed. The paragraphs that follow address these things, along with such matters as the likely economic future and the system of occupational education that operates in this country. More detailed versions of the recommendations appear on the concluding pages.

THE UNFOLDING ECONOMY AND ITS IMPLICATIONS FOR EDUCATION

> *"For the first three postwar decades, the world economy looked like a layer cake. The U.S. layer was on top, with frosting. Today the world economy is a marble cake. Productive resources anywhere belong to owners from everywhere. There is no way to neatly slice the most delectable piece from a marble cake."*
>
> Glenn Pascall, Seattle *Times*

Economists no less than other oracles are more comfortable with macro prophecies, such as economic system reorderings, than with statistically specific predictions. Still, it is surprising that there has been so much recent and remarkable agreement on the abstractions, so much, in fact, that as the nation moves through what John Naisbitt calls "the end of denial stage," the debates are characterized more by enthusiastic suggestions for creative programs than by quibbles over details.

If there is any question about a new game, one need only to reflect on the times each day that new terms with economic connotations are encountered. "Technology," "Competitiveness," "Trade Balance," and "Productivity" are words that have taken root in the national lexicon. Slowly, the deeply held affections Americans have had for their traditional industrial base are being displaced.

Some see a gradual and natural progression. David Pearce Snyder is an example:

> *"Simply put, America is currently about half-way through an economic transformation that is at least as substantial as the Industrial Revolution."*

Others such as Willford Wilms respond more dramatically:

> *"Rapid shifts in economic power have converted the eastern United State and western Europe into what is called the 'Rust Belt' and have forced the U.S. into*

competition with the nations of the Pacific Basin. . . The speed of change is increasing [and products that used to] have a life of two to three years without competition [now are encountering copies] on the streets in 120 days."

As with education, "restructuring" is a term now commonly applied to the economic sector. In both cases, for different people it means different things. Much depends on the assumptions. Here the critical factors affecting the emerging economy are considered to be those associated with increasing global economic influences and the related intensified international character of competitiveness, the accelerating rate of technological change, the expanding importance of the service sector of the national economy, and changing American demographics with their likely affects on the American work force. The major dimensions of all of these now are well-known and need be reviewed only briefly here.

The critical factors affecting the emerging economy are those associated with increasing global economic influences and the related international character ofcompetitiveness, the accelerating rate of technological change, the expanding importance of the service sector, and changing American demographics.

The Emerging Global Economy: The Hudson Institute nicely summarizes the elements leading to newly interrelated economic systems on the global order as follows:

"Gradual improvements in transportation and communications technologies have slowly woven the world's economic fabric more tightly together. Railroads and long-haul trucks, coupled with radio and television broadcasting and microwave telecommunications, created a national U.S. market during the first six decades of this century. Since the 1960s, container ships, jet airplanes, and satellite and fiber optic communications have created an international one."

Goods and services now travel freely around the world, and their prices are determined by international rather than national markets. Trade presently accounts for a larger fraction of the American GNP than ever. National exports nearly doubled and imports nearly tripled during the thirty year period between the mid-1950s and mid-1980s. World capital and labor markets are integrated. Americans now invest routinely in Japanese stocks, and Japanese and British vie for developed real estate in Hawaii and Manhattan. Many of the prospective sellers are not American but Arabian.

The economies of all western industrialized nations are interrelated, and autarky, national economic self-sufficiency, has become nearly as arcane as the literature arguing its essentiality. This nation is fully involved. The competitive implications are equally clear. Agility requires the ability to sell at least enough goods and services abroad to pay for those imported. International competitiveness is tied to the relative standard of living, as consistent trade imbalances ultimately will be paid for in the form of reductions in that standard.

Competitiveness also is another way of looking at national productivity. The goal can be to keep up, or it can be to excel. Much of the comparative growth in the productivity rates of America's competitors can be attributed to advances in manufacturing in their countries, compared with lagging attention to obsolescence here. This nation's relative position can be attributed to management policies respecting product design and retooling, aging industrial plants, rising domestic labor costs, and the devastation and reconstruction of industries in other countries during and after the Second World War. Perhaps most important is the virtually complete absence of competition for the United States in the decades immediately following WWII.

The economies of all indus-trialized nations are inter-related, and autarky, national economic self-sufficiency, has become nearly as arcane as the literature arguing its essentiality.

Reluctance to interrupt production processes with innovations or change management systems and worker practices are vestiges of the nation's extended post-war domination of the world economy and the until recent comparative insulation of its own economy from external influences. Until now there was no pressing desire to change because there was no real need to change.

This is no longer so. For the first time in modern history, this country's manufacturers are encountering consumer impressions of domestic product inadequacy. This is in ironical contrast with the pre-WWII movement of some Japanese industry to the city of Usa, Japan, so that goods could bear the label, "Made in USA" and surmount American consumer resistance to inferior Japanese manufactured products. So far this strategy has not been employed here.

The United States has a reputation as an inventor nation, in no small part because of the comparatively large research and development efforts maintained here. The nation's edge in that department, however, has been consistently offset by failure to consolidate discoveries into production -- again, to interrupt

production processes with innovations or dramatically change product lines. The transistor, invented here but exploited in Japan, is a national legend. The video cassette recorder is another example: although invented in this country, all home VCRs are manufactured in Japan.

This characteristic also applies to modern managerial practices and concepts, many of which trace their genesis to American administration theory building but which were studied and developed in other countries, most notably Japan, and which are now finding their way back to these shores, landing amidst a dab of xenophobic suspicion.

America's position of international economic dominance is being altered as other nations attain higher levels of development. To the extent that educational achievement is important to a competitive work force, comparing the test scores of high school graduates among different states no longer provides as much information as comparisons with scores of graduates among major nations of the world. In the global economy, the high school graduates of Bismarck and Denver are competing with high school graduates in Nagasaki and Cologne. The implications for continued mediocrity in the country's educational program are inescapable.

America's economic dominance has altered. To the extent that educational achievement is an aspect of a competitive work force,comparing achievement scores of high school graduates of different states no longer provides as much information as comparisons of scores of graduates amongmajor nations of the world.

The Rapidity of Technological Change. Accelerating technological change comprises the second major component of the new economic setting. Technological change is not new, of course, since it marks epochs of civilization's progression to the present (e.g., The Stone, Bronze, and Iron ages, etc.). What is new is the rate of development, a rate that is acquiring exponential characteristics. While the industrial revolution also was a manifestation of technological change, and the forces it set in motion have had continuous effect, the present emphasis on new materials, information and data processing, and new product designs, all arriving at an skyrocketing rate, argue for distinction.

The pace of technological change is so rapid that no industry, let alone educational system, can keep up with it. Modern aircraft, transistorized radios, computers, kidney dialysis machines, ultra-light sailboats, German and Italian specialty cars, and video disks describe innovations that increase in number more rapidly than lists can be prepared to arrange them. There is no question that this will continue. Technological developments are expected to be felt most in data processing, commu-

nications, new materials, and biotechnologies, but their effects will influence conceptions of work place, consumption, and the nature of competition across the full economic spectrum.

The mystique of technology also influences impressions of future needs for workers. According to David Stevens, the technology issue raises three essential questions:

> *"Do the occupations created by technological change require more skill than the jobs it eliminates? Does the impact of new technology on existing jobs increase or decrease skill requirements? And within fast-growing industries that produce hardware for the new technologies, do workers require more skill or knowledge than in other industries?"*

The pace of technological change is so rapid that no industry, let alone educational system, can keep up with it.

The conventional answers to these questions are positive. But some uncertainty about their extent resides in the equal likelihood of more user-friendly systems. Henry Levin, for example, suggests that the application of new technology will reduce skill requirements for most jobs in the same manner that more user-friendly computer programs has reduced the skill requirements for people working with word processors.

The important point is not so much whether new technology engenders need for more skill as that it creates need for the capacity to change, and this is what people mean when they use the expression, "learning to learn." Maybe another way of stating this is by reference to what David Stern sees as a need for fast learners in the work place, an opinion tied to the view that America's future competitive edge lies in the direction of specialized, low volume production, and away from standardized manufacturing.

The call for constant learning and adaptation by workers will be heard again. As for now, it is clear that the more complex the technology, the more important are human intellectual and judgmental skills and initiative. The greatest obstacle to the full utilization of advanced equipment in the American work place is the scarcity of qualified people to operate and maintain it.

Whatever else, as manufacturing and other processes become more sophisticated, the emphasis on the type of worker required will change from people with relatively low skill levels for work in traditional manufacturing settings to individuals with much higher skill levels to work with more complicated produc-

tion processes. Almost certainly this will require a thorough educational grounding and educational renewal on a continuing basis.

A New Emphasis on Service and Information. The third aspect of economic change proceeds from the growing importance of the service component in the national economy. Goods-producing activities accounted for 45 percent of the American working population in 1929. By 1977, the portion they comprised had declined to 32 percent, and by 1986 the percentage had contracted to 25 percent. The service sector accounted for the remainder. Between 1958 and 1982, manufacturing declined from 30 to 21 percent of the GNP.

The National Alliance of Business reports that only five percent of the new jobs created during the 1970s and early 1980s were in manufacturing, while ninety percent were in the service and information industries. Fifteen million manufacturing jobs are expected to be restructured before the end of the century, and a similar number of service jobs are expected to become obsolete. Of the estimated sixteen million new jobs replacing them, nine of ten are expected to be in the service sector.

Only five percent of the new jobs created during the 1970s and early 1980s were in manufacturing, while ninety percent were in the service and information industries.

A bit of a history is helpful. Economic development presumes a progression in relative emphasis from employment in agricultural production, to manufacturing, to services. Present changes in the proportion of employment represented by manufacturing are paralleling earlier changes in agriculture, in the sense that as farming became more productive fewer workers were required to produce the nation's food supply. Whereas the nation used to be heavily agriculturally-oriented (and this too had its effects on the educational paradigm in the form of school years keyed in length and timing to the planting and harvest cycle), now only a fraction of the population is actually engaged in farming. In 1910, an estimated 12 million people were engaged in farming. Presently the figure is three million, but these three million produce twice as much food. As manufacturing follows a similar progression to greater efficiency, fewer people will be involved in production.

Economic development presumes a progression in emphasis from agricultural production, to manufacturing, to services.

The United States is not alone in this respect, as, according to the World Bank, the pattern also applies to other industrialized countries, where services account for nearly two-thirds of production. The shift has been gradual although it accelerated

during the postwar years, but clearly the provision of services clearly has displaced the production of goods as the nation's principle economic activity, and economic growth has come to depend at least as much on human as physical capital.

At best considerable controversy surrounds the transition, since it is difficult to imagine an economic system that in extreme effect would feed upon itself through a cash flow maintained by service providers selling services to other service providers. It also awakens fears about national security.

Anxieties also are prompted by the specter of job dislocation, as manufacturing plants close, and workers, communities, and states assume the costs of unemployment, retraining, and relocation. The image of a former steel worker learning keyboarding in a retraining program offers little reassurance, since not only are the requirements for dexterity different, but the pay is not the same.

Lingering misconceptions about characteristics of the service sector add to the fears in the sense that service workers are believed to be more poorly paid and less engaged in jobs that contribute to the national economy (e.g., jobs involved in the production of goods, which are tangible and possess a measurable "value-added" dimension). This probably flows from deeply ingrained convictions that goods constitute wealth, whereas services do not.

At best considerable controversy surrounds the transition, since it is difficult to imagine an economic system that in extreme effect would feed upon itself through a cash flow maintained by service providers selling services to other service providers.

Presently the nine largest service industries in descending order are retail trade, education, health care, general government, finance, insurance and real estate (one category), food service, wholesale trade, transportation and public utilities, and business services. All are heavily reliant on the quality of human capital, affirming the view that this resource is now the critical factor in the economic rate of growth and the standard of living.

According to the National Association of Business, as the service sector expands and technology alters the work place, demands for higher levels of entry skills will be stimulated. In this view, three-quarters of the available jobs will require some education or training beyond the high school. This is separate from those positions requiring a college degree. While computer skills will be important, basic academic skills are considered essential. These will need to be augmented with problem solving, analytical, and communications skills.

In the end, the skill, dexterity, and knowledge of the population are the critical aspects of human capital. All fall within

the province of education. In the words of Eli Ginzberg and George Vojta:

> *"Simply put, it is the expansion of knowledge, skills, imagination, ideas, and insights of working people that create the margins from which physical capital is accumulated, leading through productive investments to the further accumulation of capital."*

Changing Demographics. It is relatively easy to identify changes in the population in the short run. All of the people who will be workers already have been born; fertility rates are known, and although these could change they will not immediately affect the work force. The only short-term variables are migration (movement among the states) and immigration (entrance from abroad).

In the end, the skill, dexterity, and knowledge of the population are the critical aspects of human capital.

The population is expected to increase one percent per year between 1985 and 2000, with the national total expanding from 240 to 275 million (within a range of 256 million [seven percent increase] and 281 million [18 percent increase].) Wherever one is within that range, however, the rate of increase will reach a low unprecedented except for the period of the Great Depression.

These changes will carry over to the work force, which will register reduced growth as decreasing numbers of people enter it. The work force is expected to increase 22 percent, or from 115 to 141 million. The maximal expectation, occurring if the highest plausible immigration and work force participation rates apply, would lead to a work force of 147 million, a 28 percent increase; the most conservative scenario leads to a total of 129 million, or a 12 percent increase.

As with the national situation, growth rates for the western states are expected to decrease, although the regional average will continue above the national figure: according to the Western States Strategy Center, the western average is projected to increase 19.7 percent between 1985 and 2000, compared with either the Hudson Institute national estimate of fifteen percent for the same period for the whole country or the much more conservative estimate of 11.8 percent offered by the National Planning Association.

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Percentages can mask the specifics of change. A 21.6 percent projected increase for California, for example, builds on

a base of 27 million people, involving a net increase of 5.8 million people in that state, more than the present total state populations of any of the other western states. Similar observations apply to the other more populated western states. For example, the net increase for Washington, the second most populated state, should approach 600,000, or more than the total present state populations of either Alaska or Wyoming.

The western state population dynamics are generally reflections of the effects of migration. The relatively more urbanized of the western states are those with the greater populations, the larger totals of net increase, and the highest rates of in-migration during the last fifteen years.

It is impossible to think in terms of the human capital dimension of economic competitiveness without reference to the enormous changes in the composition of the work force that are certain to transpire during the remaining years of the present century.

In his report, "All One System," Harold Hodgkinson points out the good news/bad news aspects of the impending labor shortages:

> *". . . [I]t is easy to be comforted by the data on increased access for minorities to good jobs, to political leadership, and to owning their own businesses. However, it is equally clear that what is coming toward the educational system is a group of children who will be poorer, more ethnically and linguistically diverse, and who will have more handicaps that will affect their learning. Most important, by around the year 2000, America will be a nation in which one of every three of us will be non-white. And minorities will cover a broader socioeconomic range than ever before, making simplistic treatment of their needs even less use-*

It is impossible to think in terms of the human capital dimension of economic competitiveness without reference to the enormous changes in the composition of the work force that are about to transpire.

And he adds dramatically:

> *"The Census tells us that 59% of the children born in 1983 will live with only one parent before reaching age 18 -- this now becomes the normal childhood experience. Of every 100 children*

born today:

> *"12 will be born out of wedlock*
> *"40 will be born to parents who divorce before the child is 18*
> *"5 will be born to parents who separate*
> *"2 will be born to parents of whom one will die before the child reaches 18*
> *"41 will reach age 18 'normally.'*

From another Hodgkinson essay comes the advice that, "Demography is clear about what will happen to the cohorts who are here now. All they have to do is get older, and we have the future."

As the prime entry-level age groups in the population shrink, the high school drop-out rate continues. This can create a cruel paradox, as, on the one hand, the sheer demand for workers (including low-paying, unskilled positions) creates an economic incentive for high school students who already may be wavering, thereby contributing further to the drop-out rate, while, on the other, it exacerbates difficulties for employers needing to fill entry level positions for higher skilled jobs. This could induce them to appeal for increases in immigration or transfer contracts to foreign-based firms. In any event, all other things equal, the resultant need for industry expenditures for remedial and recurrent training could at least marginally drive up production costs, affecting price competitiveness in the world markets.

A shift to a mix of occupations requiring higher educational and skill requirements is now widely accepted. Most new jobs will require education beyond the high school, and those requiring a college degree are expected to nearly double. Service and management related occupations are expanding. As these changes occur, education requirements, stated in median years, will change with them. The Department of Labor indicates that the most rapidly expanding job sectors are those that require high math, language, and reasoning capabilities.

Service occupations, administrative support, and marketing and sales combined, will account for more than half of the net new jobs. Even in the low and medium skill jobs in these sectors, as the authors of the Hudson Institute report point out, "workers

will be expected to read and understand directions, add and subtract, and be able to speak and think clearly. In other words, jobs that are currently in the middle of the skill distribution will be the least-skilled occupations of the future, and there will be very few net new jobs for the unskilled."

Discussions of population change and composition can fill volumes. That is not necessary here, where the objective is reasonable speculations about the composition and distribution of the human capital resources available to this nation and the western region as they cope with the conditions of economic change.

The Changing Work Place

These changes -- the expanding presence of information and technology in manufacturing, the growing presence of the service sector in the economy, the increasing presence of modern managerial practices, the trend to increased delegation of responsibilities to production units -- create important changes in the work place.

A shift to a mix of occupations requiring higher educational and skill requirements is inevitable. Most new jobs will require education beyond the high school, and those requiring a college degrees are expected to nearly double.

Marc Tucker and David Mandel speak of a trend to "pushing decision-making down to the front line of workers and giving the people in these units the freedom to decide how to get the job done and holding them accountable for results." These writers also speak of flexibility both in institutions and in people, but they are less than sanguine about prospects:

> *"Almost everything in our current situation conspires against this requirement, not least the poor education of the lower half of the work force, which makes their training for changing requirements very expensive if it is possible at all; [and] the narrow specialization of the education and training of the upper half of our work force, which induces great resistance to changes that would lower demand for their specialty;"*

Robert Reich similarly writes of production lines that require precision engineering, are custom-tailored to buyers' specific needs, and depend on rapidly changing technologies, all of which will need to be produced by "flexible systems." These are pivotally dependent on employees' skills and organizational teamwork:

> *". . . much of the training of necessity occurs on the job, both because the precise skills to be learned cannot be anticipated. . . and because individuals' skills are typically integrated into a group whose collective capacity becomes something more than the simple sum of its members' skills."*

Most of this further accords with other conceptions of the changing work world and the emergence of "sociotechnical work places." According to Larry Hirschorn, in the future people may not be required on assembly lines, much of which can be automated, but factories "require human senses and intelligence to pay attention and to intervene when things go wrong." Things do go wrong, as in the meltdown of the nuclear reactor at Three Mile Island. When failures are anticipated ("first-order failures"), measures can be engineered into a system to compensate. When they are not ("Second-order failures"), they cannot be: "Unlike the assembly line, . . . what constrains the pace of continuous-process production is not how fast workers move, but how fast they learn. Learning becomes part of the job." Sociotechnical factories, of "which about 500 have been created in this country in the last decade," integrate work and learning:

> *"The workers are organized into teams based on natural segments of the production process, such as packaging, processing, and laboratory work. Teams have considerable autonomy, sometimes their own budgets. Workers train one another and rotate through the teams to learn the full complement of skills."*

Finally, this kind of work place requires what Frank Pratzner and others refer to as "Sociotechnical Literacy:"

> *"In contrast to the more popular notion of technological literacy, sociotechnical literacy seeks a balanced treatment of the human social and demographic aspects of work, as well as the economic and technological aspects, and it focuses on their interactions. It emphasizes development of a broad perspective and understanding of the nature of technology and work in a democratic, tech-*

nologically advanced society. It also emphasizes development of broadly applicable, highly transferable skills and knowledge needed to function in such a society and work place, including development of: (1) group problem solving skills (interpersonal and group process skills, problem solving and decision-making, planning, and communication); (2) skills in business economics, business operation, and statistical quality control; and (3) an understanding of the philosophical underpinnings and consequences of shifts from a mechanistic, technological, scientific management perspective of work to a high-involvement, participative management perspective."

Sociotechnical literacy requires an integrated, multi-disciplinary curriculum and a more holistic approach to the delivery of instruction.

This is exciting. But the solutions are complicated by the fact that for awhile at least, just as the nation has needs for adaptive production workers, it also has needs for plumbers, electricians, construction workers, dieticians, auto mechanics, office workers, cashiers, cosmetologists, and others in an almost infinite range of occupational titles whose skill requirements and capacities for adaptivity are a bit more conventional. While the promise of high-tech is exhilarating, there are many jobs that are not yet dramatically altered by it.

Not many sighs of relief can be allowed by this disclosure, since if anything it requires the educational system to find the appropriate responses to two types of requirements: one centering on a solid academic and technical grounding as a base for hi-flex skills and work places; the other directed to the more familiar traditional occupations.

The clear direction of escape is toward:

Basic and core competencies as a base for further learning for all workers;

Identification of occupations for which pre-entry occupation-specific education is an appropriate qualification;

Clearer role assignments for basic education and for specific occupational instruction among secondary and

postsecondary institutions;

Better information on developing demands for workers and closer attention to educational program sequencing; and

Effective retraining and recurrent education programs.

David Stevens is on point with his assertion that the educational system needs to settle on three themes: compulsory schooling which emphasizes general education and not specific vocational training (he also stresses the importance of competencies rather than course completion); recurrent education available and fitted to the needs of working adults; and counter-cyclical training that will be available during periods of high unemployment (reversing the present pattern of training cutbacks during economic downturns).

The Implications for Education

The educational demands of the unfolding economic contest stress early acquired basic skills as a foundation for work or further schooling, positive work habits and attitudes, adaptivity, a sound technical and scientific grounding, entrepreneurship, and a receptivity to on-the-job learning and training.

Workers must be able to think, and this requires the ability to determine what to do when there are no clear standards for guidance, resolve practical problems when there is no single right solution, make good judgments on the basis of incomplete information, and understand what is going on when others see only chaos.

In addition to these capacities, they need to be able to read fairly complex material, write well and communicate, possess good analytical skills, understand problems in mathematical and scientific terms, use modern information technology, develop imaginative and creative abilities, work in teams, be self-reliant and be able to learn what they need to know to get the job done. Professional and technical workers and managers require even higher levels of competence, especially the capabilities of applying the theories they have mastered in college.

Whatever else, everyone seems to agree on the importance of core competencies (literacy and computation). Core academic and literacy skills are included in virtually every list of necessary transferrable skills, i.e, skills considered essential to a wide variety of jobs. There is similar agreement that a high number of Americans are severely deficient in these skills.

An apparent equal presence of agreement is apparent on the desirability of general employability skills. In Louise Fitzgerald's words:

> *"It is widely recognized that work habits, attitudes, and interpersonal skills constitute a behavioral cluster that is generally considered as important to job success as are basic skills such as literacy and computation. . . Not everyone can learn to program a computer, run a drill press, or even to read and write. But every young person can learn responsibility, dependability, commitment, and productivity. Whatever the schools can do to foster these qualities, they should do."*

Demands for a trained work force extend well beyond the conventional sectors, as lifelong learning becomes a prominent theme, and stronger associations between the public and private sectors are called for both as a means of identifying work place requirements and assuring that programs are relevant and effective through the sharing of instructional and equipment resources.

Similarly, there is growing recognition of the potential of educational offerings in the private sector and in such settings as the military.

In many ways these points underscore the importance of transferable competencies over highly specific job-limited skills. They stress mathematics, communications, interpersonal, reasoning, and manipulative abilities as resources for coping with work place requirements for communicating, solving problems, analyzing, working with others, planning, and organizing. These conditions are present in virtually every significant work experience, and the capabilities that allow people to fulfill them need to be accordingly transferrable from place to place.

Finally, the requirements of the new work place raise pressing questions about the continued capacity of the secondary

schools to provide job-specific training while simultaneously calling for early exposure to career exploration -- suggesting a more general (or no) vocational role for the high school. Ultimately, they imply need for a new definition of roles and greater coordination of program efforts between the secondary and postsecondary systems. Significantly, contemporary essays rarely distinguish between "education" and "occupational education," suggesting by choice of terminology that the classical distinctions are obsolete.

It often is stated that three-quarters of the year 2000's workers already are in place. They will have needs for certain kinds of recurrent training and educational opportunities. Longer-term national work force requirements will depend on people presently in school. In the words of Pat Choate, we need to "build a work force that is competent, flexible, and competitive." Learning must be a lifelong process: "We need to build recognition that booster shots of knowledge are as important as vacations."

There are other messages that will reveal themselves as this assessment proceeds. For now these seem to be the more important. Here it will be helpful to more closely consider the range of programs and services available to meet these needs.

THE OCCUPATIONAL EDUCATION SYSTEM

> *"It has become rather commonplace to speak of vocational education monolithically as though it were a separate, undifferentiated part of the curriculum with a clear, single mission of preparing students for work. We cavalierly use such terms as the 'academic,' 'general,' and 'vocational tracks,' as though we clearly understand the content of each and believe that something useful is accomplished by sorting students in such a fashion. In fact, the vocational education enterprise is extraordinarily diverse, at both the secondary and postsecondary levels."*
>
> E. Gareth Hoachlander,
> "The Federal Role in Vocational Education"

Occupational education in this country comprises parallel and frequently overlapping delivery structures providing universal secondary education, vocational secondary education, postsecondary technical and job-specific education, programs for high-risk youth, and various aspects of college and university education. All are in some measure involved in the provision of education for work.

The variety includes the schools, colleges, and vocational centers in the public sector, and schools and colleges in the private sector, both non-profit and proprietary. Business and industry-based education also are important performers, especially with in-service education and training programs. Education in the Armed Services similarly represents an extensive enterprise, not all of which is directly related to the martial arts and much of which has a potential for transferability to the civilian sector.

Some find the welter confusing, but others consider the variety of vocational programs and services appropriate to the disparate needs of individuals and society.

Some find the welter confusing, but others consider the variety appropriate to the disparate needs of individuals and society. While there may be a considerable number of gaps between programs and overlaps among them, in the words of researchers at NCRVE (Ohio State), each has unique purposes and clientele: "They differ from each other fundamentally in their

goals -- from mediating early socialization gaps to increasing profit margins." Strategies similarly differ, from traditional classroom training to on-the-job monitoring, as do their intents, from literacy skills to technical proficiency.

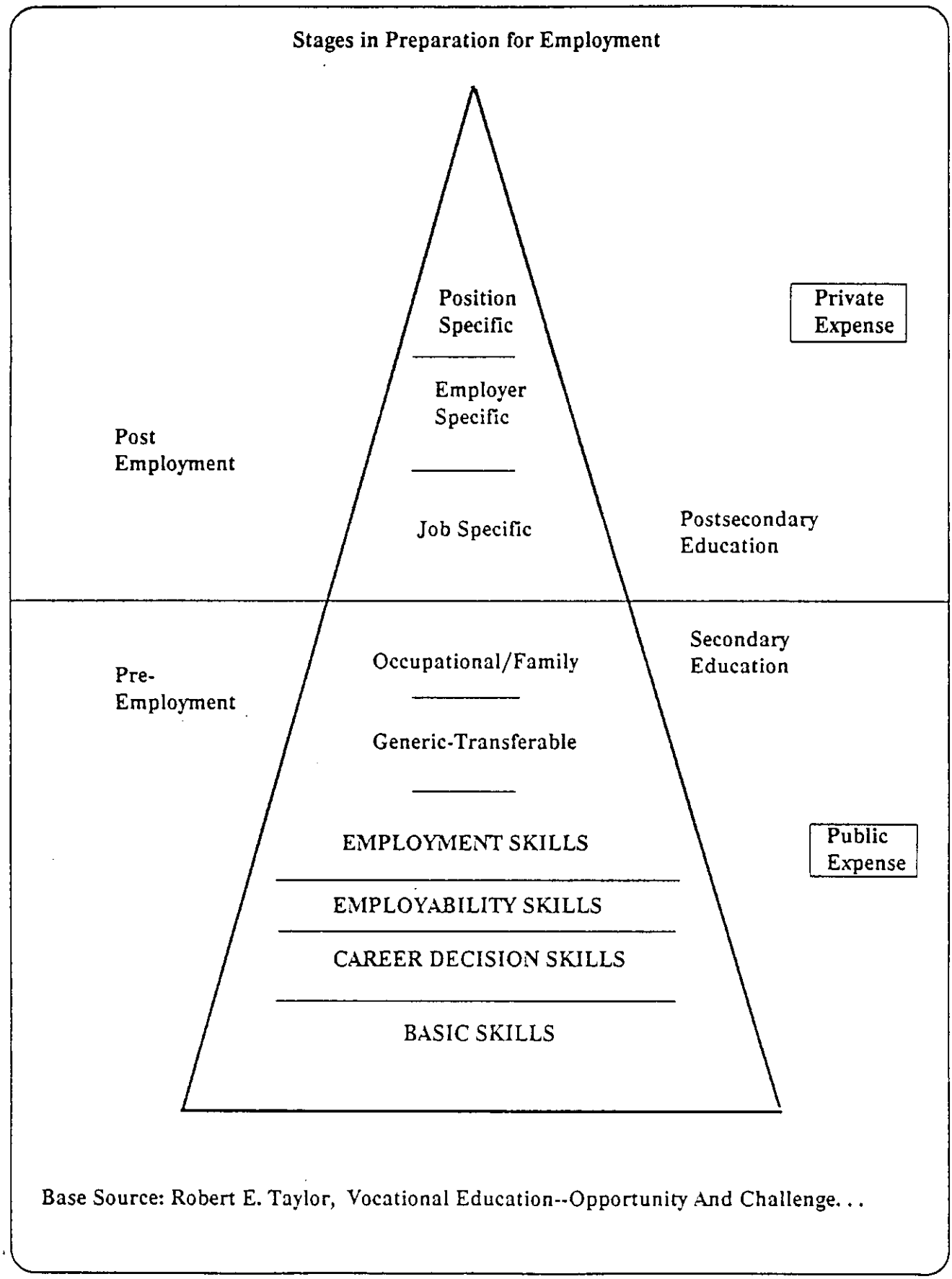
Because of this it is possible to speak approximately of an educational ladder that describes progress from more general to more specific vocational experiences. It begins with attention to basic skills and moves on to career decision-making skills. Employability skills (knowledge of the world of work, attitude toward work, work habits, job seeking and retention skills) and employment skills (specific occupation) build on this base. The last group -- employment skills -- involves several stages, each leading to increased specialization. They begin with general skills -- transferable skills that can apply to several occupations, and end with employer and position specific (customized programming) training.

Decentralization is the most obvious feature of the "system," a condition that at one and the same time contributes to the variety of programs available and complicates efforts to coordinate these resources.

These categories are arrayed in an ascending manner on a vocational education paradigm designed by Robert Taylor, a slightly modified version of which appears on the following page. They span the secondary and postsecondary sectors, with job specific training representing the major crossover point -- where they also move from the "public expense" (compulsory education) to the "private expense" (payment of tuition and fees) realm. "Post-employment training" (recurrent education and retraining) occurs at the postsecondary level.

Decentralization is the most obvious feature of the "system," a condition that at one and the same time contributes to the variety of programs available and complicates data collection, analysis, and efforts to coordinate these resources. Norton Grubb considers vocational education in America "a paradox: the 'system' of vocational education is complex, poorly coordinated, ungovernable, and therefore less effective than it could be, at the same time that everyone agrees that education and training are crucial to the future of the states and the country."

Similarly, variety does not necessarily mean congruence, a point Lew Perelman emphasizes as he argues that much of the curricula and process of formal education are irrelevant to most work needs, and more of the same will not solve the problem. For Perelman, formalized education is too limited and inefficient to meet work place requirements, and only when training and



Base Source: Robert E. Taylor, Vocational Education--Opportunity And Challenge. . .

education (formal and informal) are merged with other forms of communications and learning will the needs of the new society be met.

He has a point, since most position-specific job skills must be learned on the job, as the worker acquires experience in the particular work place. There is only so much that can be accomplished in a classroom away from the work site and with subject matter that cannot be directed to specific plant processes. The term, "academic" did not acquire its connotations accidentally, and its application is not limited to theoretical subjects. Formal education at best can only qualify people for entry to the work place. Job-specific learning commences after that.

It may not be possible to harness all of Perelman's communications and learning horses to the same wagon, but it would help if the size of the herd and the weight of the load were known. Using a couple of other metaphors, in his review of the "human capital investment portfolio of Colorado," Perelman noted:

> *"So what we have is a highly disorganized and inefficient system for investing in human capital. Investors in this market have only the haziest notion of what other investors are out there, who the alternative suppliers are, who's buying what, and what the ultimate value is of whatever is being purchased. It's sort of like buying a house by mail-order, with no broker and no information about what kind of neighborhood the house is located in, what other houses are selling for, whether there are termites in the rafters, or even exactly what the final price is going to be."*

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Perelman was able to catalog only programs in the public sector in his Colorado review for the WGA. But even there the number and variety were impressive, involving nearly twenty state agencies and sectors engaged with parts of virtually every aspect of education. The preponderance of government educational spending, according to Perelman, is in the formalized educational sectors, with 97 percent of the fiscal "investment" placed there. Public investment decreases disproportionately with adulthood, as governments not only progressively reduce funding with distance from childhood and the threshold of literacy, they correspondingly place more of the cost burden on

individuals and non-governmental sources. The pattern also is associated with the progressively diffused nature of educational services and media that occurs with distance from the formalized settings.

These views on the efficacy of the formal versus the informal educational sectors are reminiscent of Peter Drucker:

> *"One of the delusions we have in this country is that we can hire educated people. The only industries that function well are the industries that take responsibility for training. The Japanese, you know, assume that when you first come to work you know absolutely nothing. That's the right assumption. And the Germans probably have the best system of apprenticeship training in the world. . . School isn't preparation for work and never was."*

"Everything they say about vocational education is true."

Perhaps not surprisingly, with so many institutions, sectors, and people involved, each approaching occupational education with a slightly different perspective, it is difficult to get agreement on problems and benefits, or on what should be reinforced, corrected, or eliminated. Gary Hoachlander quotes a long-time observer to the effect that, "Everything they say about vocational education is true."

Thus, to believe that occupational education is a relatively static and easily encapsulated thing is to reveal a basic misunderstanding of what is going on. Whatever else, occupational education is a continuing experience in and out of formal settings.

Secondary Vocational Education

> *". . . During the last 100 years, and especially in the last 20, the vocational education system has accreted into a bewildering array of programs and missions. It reflects a series of state and federal efforts to stamp out the scourge of child labor and supplant the factory apprentice system, fight unemployment and poverty, counteract juvenile alienation, train the disabled, and obliterate sex bias in the work place. To be sure, it is not vocational educators themselves who have piled on all the set-asides and tried to make vocational education a chariot of social engineering. Many vocational education officials in fact complain of an overloaded mission. The pressure has come from outside groups, representing the interests of self-identified and myriad factions wanting special attention in education for the work place."*
>
> Gilbert Sewall, Columbia University

Most secondary level vocational programs are offered in comprehensive high schools and specialized vocational and technical institutes. About two thirds of all the institutions providing vocational education are at the secondary level.

According to Ohio State's NCRVE, an estimated 17,000 high schools offer vocational programs intended to: "prepare skilled workers, expand the work-related options of trainees, increase the face validity of general education, and enable trainees to improve their working conditions." Programs in the public schools also are distinguished by their emphasis on enhancing general education.

Because of data problems, reliable figures are elusive, but enrollments in vocational programs in the public schools are believed to have increased from six to ten million during the fifteen years following 1970. There is some present but not yet substantiated belief that the numbers are declining in the face of high school graduation requirements instituted as part of state school reform efforts.

While most secondary vocational programs are offered in comprehensive high schools (and it is to those settings that much of the criticism of secondary vocational education is directed), more recent innovations such as regional technical institutes (in California, Regional Occupational Centers) and area vocational centers (sometimes called Skill Centers) also operate at this level. About two-thirds of all the institutions providing vocational education are at the secondary level.

But a dark punumbra of criticism has historically clouded the secondary vocational effort, and its shadow persists.

Impressions of Effectiveness. Much of the activity at the secondary level can be treated positively, especially where programs offered in the consolidated vocational centers. But a dark penumbra of criticism has historically clouded the secondary vocational effort, and its shadow persists. Indictments flow from a persistently expanding mountain of sentiment that much less is occurring educationally than meets the eye. A 1985 report of the Committee on Economic Development concluded:

> *"Unfortunately, whether measured by future earnings, job placement, or employment success, there is today little evidence that [high school] vocational education is either meeting the needs of students or of the employers who are expected to hire them."*

Much criticism of voc-ed accords with those instances in which high schools are trying to accomplish goals beyond their reach. Rapidly changing work place technologies and equipment and tightening shortages of qualified instructors only can exacerbate the problem.

In their report on California vocational education, David Stern, Gary Hoachlander, Susan Choy, and Charles Benson found that "California students who took a concentrated sequence of high school vocational subjects . . . had a 26 percent unemployment rate [the following spring] compared with a 23 percent unemployment rate among all 16 to 19 year-olds and *a 27 percent unemployment rate among high school dropouts,*" leading them to conclude that secondary vocational training did not provide these students with any relative advantage in finding jobs after graduation. They also could find no evidence that vocational classes were any more effective in retaining drop-outs, countering an argument that is frequently offered in defense of such programs in the high schools. They concluded with this observation:

> *"On the whole, vocational classes as currently offered in California comprehensive high*

schools are not demonstrably effective in helping students find jobs after they graduate, or in retaining would-be dropouts. Furthermore, there is no evident way in which reallocating resources among existing high school programs would bring about much improvement in labor market outcomes for graduates."

This is may be because what is offered in high school vocational programs is not widely sought by employers. The Bureau of Labor Statistics reports that high school occupationally specific programs are the source for only five percent of the jobs requiring specific occupational training.

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The exception is secretarial training, where thirty-five percent of the nation's secretaries report they received their training in high school vocational office and business programs. According to this report, "Outside of this area and certain drafting, agricultural, auto mechanics, and crafts programs, there appear to be few [high school] vocational programs that justify the investment in them."

Vocational education usually is divided into seven categories, as programs are organized as Agriculture, Business, Marketing, Health, Home and Family Life, Trade and Industry, and Technical. Specificity of instruction varies as well: from career exploration and industrial arts programs to advanced courses in specific professional areas. Some of these activities probably are appropriate to the secondary level, e.g., some Agriculture, Marketing, Home and Family Life, and Business instruction, along with career exploration and industrial arts offerings. Many more are not.

Considerable criticism of voc-ed accords with those instances in which high schools may be trying to accomplish goals beyond their reach. Qualification for placement in most Trade and Industries, Health, and Technical sectors, for example, is increasingly beyond the capacities of the high schools. Rapidly changing work place technologies and equipment and tightening shortages of qualified instructors can only exacerbate the problem.

Some of effectiveness problems may be attributable to the varied capacities and needs of students in their late teens, (which, if anything, only cast more questions on the suitability of vocational studies occurring too early in the high school program.)

According to Richard Elmore, because of different capabilities and needs, the effects of high school vocational education are differentiated:

> *"The system caters well to young people who have a strong sense of direction, or who have strong adult guidance. It works poorly for that significant fraction of young people who have neither of the above. The typical pattern of movement for noncollege-bound young people is a kind of directionless 'milling around,' which the system encourages because no institution takes responsibility for any clearly defined segment of the population."*

The relationship between secondary vocational education and outcomes also is tenuous. Following her review of the national literature on vocational education, Louise Fitzgerald cited widespread variance between expectations and achievements: "The goal of vocational education -- to prepare individuals for gainful employment above unskilled levels -- is clear; however, the results of vocational education have not always been as clear. Regardless of which outcome criteria are used, vocational education yields meager, if any advantages to its graduates beyond those conferred by a general curriculum." She cites studies that found:

'The goal of vocational education is clear; however, the results of vocational education have not always been as clear."

> *"No differences appear to exist in unemployment rates between vocational and nonvocational high school graduates;*
>
> *". . . No differences in earnings [exist] between vocational and nonvocational graduates. Those studies that do find an initial difference in favor of vocational education graduates report that it disappears over time;*
>
> *"There is little, if any, advantage for vocational graduates in terms of basic skills achievement;*

"It is unclear whether vocational education helps to retain potential dropouts; and

"Civic activity (i.e., voting) is infrequent among all graduates."

Tracking and Dropout Prevention. The potential for goal displacement resides in the insistence that substantial numbers of high school students would drop out were vocational education courses and programs not offered. The case is probably overstated, since at best the evidence is mixed. In a 1982 study, Donna Mertens found that participation in vocational education was only marginally influential in preventing high school dropout. The size of the effects were small, and vocational education by itself was not a strong enough intervention strategy to keep the most alienated youth in school.

In a more recent, 1985, report, James Weber identified nine features of exemplary dropout prevention programs. Vocational education was only one. Others included low teacher-pupil ratios, holistic approaches to instruction, counseling and supportive services, remediation, and tying school activities to the real world. Weber also stressed more extensive career exploration and career education experiences, particularly at the transition point into the high school. One is left with the impression that vocational education is a possibly useful weapon in the struggle against dropping out, but it is not a sufficient one.

One is left with the impression that vocational education is a possibly useful weapon in the struggle against dropping out, but it is not a sufficient one.

In any case, people who advocate an academic program stressing basic skills and competencies for all high school students are engaged in a protracted debate with others who favor the continuation of a system where students can be channeled into college-bound, general, or vocational tracks (and various sub-tracks of differentiated difficulty among them) according to their abilities, interests, and needs. One side insists that all students need core educational experiences; the other argues that many students will not stay around to get them. Gordon Sewall offers this opinion:

"Contemporary reform cannot realistically or properly ignore vocational subjects in educational improvement efforts. First, they are deeply rooted in the secondary and postsecondary appa-

> *ratus, and, second, in select forms they pay real educational benefits. Essentialists and other non-negotiating advocates of the liberal arts subjects cannot wish away human limits: it makes little pedagogic or psychological sense to flog 14- and 16-year olds who have been near the bottom of the academic barrel since third or sixth grade into purely academic courses, where demoralization is likely or inevitable."*

In the end, the issue is the conviction vocational education is the only alternative for marginal students. Critics view the argument is a cop-out: because vocational education's record is so bad, to retain it for marginal students is to deny them both an education and adequate preparation for a future career.

Thus, removal from the horns of the dilemma requires questioning of the assumption that vocational education is the best solution to problems associated with the high school success. Gilbert Sewall's subsequent comments are helpful:

> *"to simply feed these young people, teach birth control and cooking, keep them off the streets until they drop out or go into the Army [is not the solution]. Much of the answer lies in . . . a kind of vocational education [that builds] on academic skills and respect for the cognitive foundations of effective career planning."*

The reform movements ofthe 1980s are predicated on the realization that high school is the end of the linefor most students, and an education missed is an education lost.

The reform movements of the 1980s extend the rigor and quality of education previously reserved for the college bound to a much wider spectrum of the school population -- in fact, to all -- and thereby seek to mitigate the subsequent social effects of a tracking system that has accomplished little more than keeping students enrolled in pointless programs. They also are predicated on a realization that high school is the end of the school line for many students, and it represents their only effective opportunity to acquire the essentials of a basic education. The core competencies may be more important for these students than for those who continue their educations, and who will have future opportunities to make up for what is missed.

A Matter of Equity. A related high school vocational education question centers on equity. This involves, first, the fundamental American right to a basic education and, second, the belief that occupational attainment and social status are functions of education.

John Goodlad offers some important impressions of the equity aspects of high school vocational education in his book, *A Place Called School:*

> ". . . [T]hree questions nag me. Is the division of secondary schools into students emphasizing vocational studies and others pursuing primarily academic programs a self-fulfilling prophesy reflecting a popular myth about learning that begins its relentless course in the primary grades? Is the ultimate fulfillment of this prophesy a further division of people into two classes of workers? Finally, is there equity among socioeconomic classes and Whites, Blacks, and Mexican-Americans in regard to the circumstances and the outcomes of the process?
>
> "The answers put forward by some others who have studied schools are yes to the first two questions and no to the third.
>
> "My conclusions are similar. . ."

There is not much more to add to that.

The Subject of Data. Overlaying the debate is the matter of vocational education data reliability. Subjects labeled "vocational education" are popular in the high schools, and most students, estimates range as high as 90 percent, take some vocational-related instruction. Many of these students are vocational education dilettantes, but the amalgamated effect of these credit hours contributes to a distorted impression of the numbers of students actually engaged in structured vocational education programs.

Under present extant definitions, virtually every high school student is a vocational student and the term has become meaningless.

Gary Hoachlander insists that the definitions of vocational education are much too broad. Based on his work on vocational

education in California, he concludes that the conventional estimate of 90 percent of high school students enrolled in vocational education is too high, since it includes high school sophomores in courses classified as business math, typewriting, computer programming, and career exploration, among others. "Under [such definitions], virtually every secondary student is a vocational education student, and the term becomes meaningless." One of Hoachlander's solutions is a new course taxonomy based on a separation of offerings into occupational specific and non-specific categories. When he applied his scheme to an analysis of California high school student course-taking patterns more precise conclusions followed. For example, while there were clear differences in course-taking among students who described themselves as vocational, general, and college-bound, the magnitudes of those differences were not nearly as great as might have been expected. Half of the activity in vocational education occurs in non-occupationally specific courses, and over half of the students who declared themselves vocational majors took fewer than three units in a single major area of the occupationally-specific curriculum. When it comes to career preparation, there is less occurring on the high school campuses than the gross indicators imply.

Half of the activity in vocational education occurs in non-occupationally-specific courses, and over half of the students who declared themselves vocational majors took fewer than three units in a single major area.

In this context, the question, "What is vocational education?" becomes more clear, especially when it is followed by others identified by Gordon Sewall in a particularly nettlesome series:

> *"When do courses have validity and when do they become simple mechanisms to keep teenagers off the streets and highways? What items of general education carry the voc-ed flag? What, in fact is the 'general track' and how does it complement or differ from vocational education? At some point in the game, vocational education bleeds into dreadful life-adjustment courses; into part-time, minimum wage jobs during school hours disguised as work-study programs; and into warehouses for unruly teenagers. Even text books are patronizing in content. The current Prentice-Hall secondary catalogue's home economics program promises a curriculum in 'complete living.' Its texts emphasize caring, human interdependency, and recogni-*

tion of sound nutritional principles. The catalogue's sales message seems to suggest that the children in the program need not perform abstract mental operations nor think beyond . . . happy-day slogans."

Involving Business. Vocational education's problems are complicated by the continuing difficulties program directors face in maintaining state-of-the-art equipment and faculty readiness in a changing labor environment. Unable to remain abreast of rapidly changing technological requirements, some high schools are obliged to emphasize programs in the more traditional and relatively static occupational fields irrespective of the availability of jobs or other community needs. Others turn to area vocational centers and the related potential they offer for consolidation of equipment and expertise. This tends to have the generally desirable effect of changing the nature of the home campus programs, moving them more toward the general pole of the high school spectrum.

Cooperative education -- joint educational ventures with business -- emerges as an important alternative at this point, since it allows the schools to provide some the preparatory and technical training, and the cooperating employer to provide the work experience.

At the same time, the area vocational center alternative stimulates home campus administrator's anxieties over loss of students for state reimbursement purposes. Perhaps more intriguing, present emphases on high school graduation requirements, believed to adversely affect high school vocational programs in general, may be having more specific effects on area vocational centers in the form of decreased enrollments stemming from student impressions that they lack the time and flexibility for travel to and from such off-campus activities.

Although the trend to secondary level program consolidation in area vocational centers is appealing, the occupationally specific skills many secondary vocational programs are trying to provide probably are best learned on the job. Cooperative education -- joint educational ventures with business -- emerges as an important alternative at this point, since it allows the schools to provide some of the preparatory and technical training and the cooperating employer to provide the work experience. The case is argued by the Committee on Economic Development in its generally otherwise critical report, *Investing in Our Children:*

Few managers recognize that vocational education has grown to encompass a variety of programs, most of which have little to do with preparing a student for work.

"Despite the negative findings, there are certain types of vocational programs that can make an important contribution to a student's later

> *employability. One example is cooperative education, which is a carefully worked out joint program between schools and employers, where students spend two to three hours a day in an occupationally specific vocational class and two to three hours in a carefully selected job outside of the school. . . [T]he available research [on cooperative education programs] suggests that they result in better performance by students both in school and after graduation. The key is the stress on academic instruction as an integrated part of the vocational curriculum."*

Business has an important stake in improving vocational education, and most of its involvement is with the secondary schools. But most business people do not have a clear sense of what is involved. According to CED, few managers recognize that vocational education has grown to encompass a variety of programs, most of which have little to do with preparing a student for work. The Committee encourages the business community to take the lead in sorting out what vocational education is and what it ought to do. It also calls on business to help design the measurements by which vocational education is to be judged and see that it is well-equipped, delivers quality instruction, and graduates employable students.

Business must clearly define its needs and collaborate in setting standards, improving programs, developing work experience opportunities for students and teachers. and assuring that vocational-technical programs match current and projected employment needs.

The possibility that the business community may not fully understand what is happening and what it needs to do with the schools is apparent in the writings of others. David Kearns of Xerox, lamenting what he refers to as the 50% defect rate, describes the schools as a failed monopoly and calls for their complete restructuring to improve results. He argues that business and education have not succeeded in their partnerships to improve the schools because business has let education frame the problem and set the agenda. The partnerships hurt more than they help because they shore up a system that has deep structural defects.

Recently, Dale Mann of Columbia University completed an extensive study of business involvement and concluded that partnerships are important. But his comments also accord with some of David Kearns'. He argues that business does not exist in any monolithic sense. Even big cities are dominated by small businesses. By focusing on big business, education overlooks a

huge group of potential collaborators. In this view, as important as it is, the CED probably is not a good sampling of American business.

In Mann's view, three features of the business community's interest in the schools stand out:

> *"First, business is not much interested in job-specific training. This lack of interest may mean that it is given up hoping the schools can ever be of much use in this area, or it may mean that business itself feels it can do this job better themselves. It also may signal an interest in adopting a European style division of labor, with schools shouldering much of the responsibility for general, even liberal, education.*
>
> *"Second, the most amorphous goals seem to count the most. Beyond taxes, no enforceable code of social responsibility for corporations exists. Yet, among those firms that are involved with the schools, the fuzzy idea of social responsibility seems to central. In this regard, the reasons why people do things may be less important than the reasons why they do not. If we wish to stimulate the public/private interactions, we must ask the 80% that have no identifiable presence whatsoever in the schools.*
>
> *"The third conclusion that we can derive from the involvement of business in the schools has to do with the importance of projects, discrete activities, particular things, events, persons, and even students. So far most business involvement seems to have been built on fuzzy altruism, wrapped around particular products."*

Similarly, Ted Kolderie argues that very little of the present business involvement in public education can be called either challenging or decisive. Partnerships are the order of the day. Business has approached the schools offering to help and wanting to be liked, so the problem gets framed by the people who run the schools, and business gets involved not with the central

issues of education but with a classroom here, a school there, a district somewhere else. Much of business' attempts to help the schools are "doing" improvement, donating computers, giving science teachers summer training. He states that the crucial questions are: "Do the improvements last? Do the improvements spread? Too often the experience is that isolated, episodic improvements do not spread, and they last only as long as the external financing lasts."

Kolderie advises business to concentrate on strategies that can leverage change. Public education is a cartel, free, compulsory, serving discrete service areas, with one teaching organization. Competition is suppressed. Among the strategies he proposes is increased choice through voucher plans, which he views as important levers because they challenge the public education monopoly. Along with others, he believes in the effects of healthy competition.

Public education is a cartel -- free, compulsory, serving discrete service areas with one teaching organization. Competition is suppressed.

In its report, *A Nation at Work*, the National Alliance of Business also stresses the need for greater efficacy in business education relationships. It calls upon business to clearly define its needs and collaborate in setting standards, improving programs, providing equipment, augmenting instruction, developing work experience opportunities for students and teachers, and assuring that vocational-technical programs match current and projected employment needs. For their part, educators are encouraged to take the initiative in building stronger linkages with the private sector, creating an atmosphere of receptivity, and demonstrating the flexibility and willingness to accommodate business' concerns. Guidance and counseling personnel are advised to become more familiar with occupation and entrepreneurship opportunities. The NAB also stresses the importance of student vocational organizations and calls for the development of placement services as part of every vocational program.

One of the NAB's major points is that business can operate at any level -- policy, systemic educational improvement, management, professional development, classroom enrichment, and special services, but it should know that in this order these reflect descending levels of commitment, and decreasing impact.

It would be impossible here to do descriptive justice to the range and variety of business-education partnerships. One of the more celebrated is the Boston Compact, a program now about ten years old in which business promises summer jobs and priority hiring of qualified local high school graduates if the schools agree

to improve daily attendance, reduce the drop-out rate, and improve academic performance and job placement. Philadelphia seeks to expand part-time work opportunities with jobs for those who meet basic standards as an incentive to stay in school and improve their performance. The "Peninsula Academies" in California are three-year high school programs for at-risk students to provide them with incentives both to graduate and to acquire labor-market relevant skills. An academy combines academic and technical training in a school-within-a-school setting. It is based on a school-business partnership and offers students access to guest speakers, career-oriented field trips, employee mentors, and work experience. Many others can be cited, but few place much reliance on job-specific training in the schools.

The Future of Secondary Level Vocational Education. And so it goes. On balance one is left with a view that vocational education as presently conceived and offered in the public high schools has far to go. At best the evidence supporting its claims for effectiveness is weak; at worst it suggests ineffectiveness and discriminatory processes.

One is left with the feeling that vocational education as presently conceived and offered in the public high schools has far to go.

Many authorities favor purging all employment-specific vocational education from the secondary school level, at least all of the Trade and Industries, Health, and Technical programs; others would like to see them transferred from the high school campuses to the more specialized area institutions where they can be consolidated for juniors and seniors who would have by that time acquired their core competencies on the home high school campus. The secondary emphasis would be on practical aspects leading into occupationally-specific work at the postsecondary level. Ideally, occupational programs would represent a continuum, with multiple points for exit and nonrepetitive re-entry.

The present value of vocational education in the comprehensive high schools is doubtful. Almost anything short of a fundamental reorganization will be little more than 'shoring up a failed system.'

The present value of vocational education in the comprehensive high schools is doubtful. Almost anything short of a fundamental reorganization will be little more than "shoring up a failed system." Reorganization requires clarification of common school goals to place the emphasis on the core competencies. Vocational education should not be provided until those competencies are mastered -- probably the junior year. Even then the stress at the secondary level should be on the more general aspects of career planning in preparation for advanced vocational

studies at the postsecondary level, rather than, as at present, occupationally specific training in a limited number of increasingly redundant fields.

As a rule, vocational offerings -- certainly trade and industries, the health areas, the technical fields, and advanced business and agriculture instruction -- should not be offered on the home high school campus but consolidated in area skill centers in integrated curricular relationships with postsecondary -- "2+2 type" -- programs. All programs should display tight linkages with the business sector.

The Postsecondary Sector

> *"Because of advancing technology, many jobs require more technical proficiency and greater knowledge of mathematics and science. These jobs also often require more mature persons than youth of high school age. As a result, attention is increasingly focused on postsecondary vocational and technical education."*
>
> Department of Education 1963 Panel of Consultants

Programs in the Public Sector

Vocational education at the postsecondary level occurs in more than 2000 community colleges and vocational institutes. The emphasis on any given type of public postsecondary institution will vary by state. In some it is on the comprehensive community colleges; in others it is on regional vocational centers; and in still others there is a mix.

The variety and range of programs in the public schools pale in comparison with what is going on at the postsecondary level.

The enrollment increase at the postsecondary level during the 15 year period, 1970-84, was tenfold, from one million to ten million students. In 1981-82, the most recent year for which such data are available, occupationally-related associate degrees comprised 63.4 percent of the total degrees awarded in the community colleges, an increase from 52 percent ten years earlier. The post-WWII emergence of these institutions has altered the role of the comprehensive high school as the place for the acquisition of job entry training.

The variety and range of vocational education programs in the public schools pale in comparison with what is going on at the postsecondary level. Here, junior and community colleges and vocational institutes offer an enormously diverse set of pre-entry, post-entry, and re-entry programs, often in flexible ways. JTPA programs, trade schools and apprenticeship programs also operate at this level, along with training in the military.

Opinions vary on whether all of this is good or bad. Paul Peterson insists that while some people may object to the variety

and overlapping responsibilities, the complexity of the post-secondary system contributes to its strength. "To the extent that vocational programs compete with one another for students, teachers, public resources, and contacts with industry, these institutions have incentives to modify and adapt their training to the changing labor market."

In spite of general impressions of effectiveness, there is evidence of uneven program quality, which contributes to what Charles Benson describes as a well-defined institutional hierarchy:

> *"Some vocational programs are exemplary in quality, enjoy abundant resources, admit a limited number of students from a large number of applicants, receive materials and supplies from the private sector, and enjoy enviable placement records. Less well-endowed programs admit students without other educational options, have limited facilities, maintain routine course offerings, and have few contacts with the private sector."*

Assessments of the secondary programs generally can be limited to the public schools, but at the postsecondary level the universe envelops any number of activities, some of which extend upward into the four-year institutions. Distinctions between what is vocational and non-vocational also can become precious, as college programs leading to licensure appear, and as industry-based programs directed to post-graduate studies offered via telecommunications are available to engineers and professionals at the work site.

Focusing the training is the critical issue.

Another important contrast with secondary programs lies in the much heavier emphasis on the economic dimension postsecondary programs display. As states look to the educational sector for help with worker training needs and economic salvation, the object of that attention increasingly is the postsecondary vocational centers and the community colleges. Conversely, high school vocational programs have become decreasingly relevant in terms of occupational preparation and economic development, often remaining so only to the extent they connect with programs at the postsecondary level.

Another important contrast with secondary programs lies in the much heavier emphasis on the economic dimension postsecondary programs display.

One result of the increasing reliance upon the postsecondary institutions for the implementation of state economic development strategies is an associated set of implicit expectations that these institutions become active participants in the process. This may be telegraphing a change in the traditional legislative willingness to go along with institutional demands for autonomy and academic independence.

Some of this is manifest in escalating expectations for articulation between the secondary and postsecondary sectors of the vocational system. Similarly, perennial annoyance over duplication among programs has been displaced by expressions of pleasure over such innovative departures as 2+2 programs and encouragement to make them less the exception and more the rule. Firm specific, customized education programs, in which community colleges and technical institutes provide training for particular companies, often using company equipment and employees as instructors are lauded because the content of the programs can be customized to the needs of the firms. Thus, they are viewed as important economic development tools available to the states, and they are popular among policy makers. They also evoke some of the nagging questions about government's role in economic development. If the skills were too firm specific, or if access were too tightly controlled, such programs would represent public subsidy of private costs. The same points can be made about retraining programs.

Annoyance over duplication has been displaced by expressions of pleasure over such innovations as '2+2 programs.'

Technical and management training tends to reside at the postsecondary level. This too is the level at which advanced entrepreneurship programs can be found. Perhaps significantly, the fields of Business and Management continue to account for the preponderance of associate degrees, representing more than a quarter of the total awards.

Part-time adult vocational-technical programs also represent an important occupational education sector. These are dispersed, but estimates are that some 70 million people participated in more than 40 million adult education courses in 1984. Two-thirds of these courses were job-related, and "job advancement" was stated as the predominant reason for enrollment. These are generally offered as evening school courses either in the high schools or the community colleges, frequently without credit. Apprenticeship opportunities exist on an individual basis, as workers make their own arrangements with employers, and they exist on a more structured basis in the form of programs

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provided in the community colleges and vocational centers (slightly more than 200, according to a 1977 survey) under the conjoint direction and operation of the institution, the appropriate union, and the employer represented on Joint Apprenticeship and Training Committees (JATCs)in structured programs. The nation had an estimated 300,000 apprentices in 1982, and a half million were projected for mid-decade. Most apprentices are in about a dozen construction trades.

Some view programs such as JTPA as vital "gap-fillers," and as useful prods for governors to steer the system.

In spite of these numbers, apprenticeship programs are not widely known in this country. The Ohio State NCRVE paper's description of American notions of apprenticeship is interesting:

> *"Although generally not considered to be a teenage program in the United States as it is in many European countries, apprenticeship training is broad-based training in all aspects of a trade or craft. The special strengths of apprenticeship programs are the partnership arrangement (earn and learn), the provision of classroom training in related areas, the on-the-job nature of the training, and the relevance of training to work place."*

Also in the public sector, the Job Training Partnership Act (JTPA) represents the leading federally-sponsored job training initiative, providing training programs for economically disadvantaged youths and adults. Its focus is on training for jobs in which there is a demand. The program also extends more responsibility to governors, and through its requirement of Private Industry Councils (PICs) gives industry an important role as well. Because the governor must designate local service delivery areas (SDAs), approve plans for local training programs, and coordinate JTPA programs with other service providers, JTPA offers some direct executive leverage within the employment training sector. JTPA combines a number of important services with job training, including remedial education and job search assistance.

The Job Corps is a second federally sponsored program, in this case directed to hardcore unemployed youth and dropouts who need residential and alternative programs. The program is targeted and operated in a controlled environment, and both features enhance its capacity to motivate learners.

Finally, military job training also falls within the public sector. Recent figures are not available, but 1982 estimates are to the effect that $10 billion was spent to provide more than 236,000 student person years of training. Most (90%) of this training was directed to troops with civilian job counterparts, opening the possibility of a high degree of skill transfer to the civilian world. It has been suggested that transferability could be increased through the provision of transitional services. For its part, the William T. Grant Commission on Youth has recommended that the military pay more attention to basic skills:

> *"Although only nine percent of all recruits lack high school diplomas, demographic changes now under way are likely to increase that proportion dramatically. Armed forces programs designed to upgrade the academic and work skills of members should be expanded, in order to guarantee that no member will return to civilian life without both a general equivalency diploma and marketable job skills."*

Programs in the Private Sector

Turning from the public to the private sector, vocational education and job training ranging from remedial education to accredited postgraduate degree programs are offered within business and industry and in proprietary or private vocational schools.

Industry Based Training: Training programs conducted by business and industry are widely dispersed and directed to people who are in the firm. While accurate figures on enrollment and expenditures are elusive, Messrs Carnevale and Goldstein insisted in their 1983 study of employee training that this is "by far the largest system for adult education." Their conclusion is influenced by the fact that a great deal of adult education takes place informally by workers on their own. Lew Perelman was speaking at least in part of this when he noted that "learning has become the premier growth industry of the U.S. economy."

An estimated $40 to $60 billion is spent annually by industry on education for some eight million people.

Much of this training also is offered in-house by educators on the payroll or under contract, or through programs sponsored by individual corporations or trade associations. Estimates are

that corporations spend $40 to $60 billion annually, admittedly a substantial range of variance, on education for eight million people. Such a figure approximates total four-year institution annual expenditures, as does the total number of students enrolled.

Some believe that the numbers of students and dollars involved in these privately-sponsored training initiatives are underestimated. Others insist the figures are vastly overstated. Clearly, the amount of corporate training available varies by industry and firm. Larger organizations have greater capacity to provide the release time, services, and incentives than do the smaller firms. The expression, "Send us people with basic skills, and we will provide the job training," is similarly associated with the larger companies. Small businesses traditionally have relied upon the educational system for their worker supply and retraining needs. A kind of food chain operates in the business world, with small firms providing the work experience that qualifies people for subsequent employment in larger organizations. In response to an interview question, the personnel director of a major west coast company reported that his firm never hires students directly out of high school. Rather, it recruits from among the other, usually smaller, companies in the region.

It may be changing, but most formal industry-based training is disproportionately directed to the managerial level.

It may be changing somewhat, but most formal industry-based training is disproportionately directed to the managerial level. As a general rule, the people on the line are not as affected by these services. Discernible shifts to sociotechnical work places, discussed earlier, are almost certain to alter this pattern, as workers will be required to function in a variety of positions, functions, and roles while remaining current with changing technology. In-service education for these people becomes vital to the success of the production effort.

Nevertheless, an emphasis on educational experiences closely tied to the goals and requirements of the particular firm is not likely to change rapidly. Organizations are not likely to respond enthusiastically with programs designed to generally enhance the qualifications of individuals if this merely improves their attractiveness and employability elsewhere. The line is not easy to draw, however, and there is evidence of an awareness of the value of general education advancement and a willingness to provide release time and cost reimbursement for workers pursuing degrees or credentials not directly tied to the individual's position. The worker education policies of many public sector

organizations (state and local governments) reflect this flexibility. It may spill over to the private sector.

Important changes in corporate and industrially-based education programs seem to be accompanying changes in the national economy. According to Messrs. Chmura, Henton, and Melville, with SRI International, whereas company-sponsored education and training used to be directed to teaching job skills to entry-level workers, reinforcing the status quo and leading managers to treat the costs of such training as a simple expense, education and training now are seen as a strategic tool for honing the organization's competitive edge, and people are viewed more as a strategic resource. Significantly, managers also recognize corporate training as a well to "instill and foster a corporate culture that supports strategic goals."

Education and training are now seen as a strategic tool for honing the organization's competitive edge.

These authors equate corporate training initiatives to a range of objectives. Adapting to needs for a changing work force is one of the more obvious, but first there is a question of literacy:

> *"Because of failings in the traditional education system, many U.S. companies find it necessary to teach new workers basic reading, writing, and mathematics. AT&T, for example, estimates that it spends $6 million annually on remedial education for its employees. Many firms also report that they must teach such skills to older workers before these employees can enter retraining programs. GM estimates that 15% of its hourly employees (and 30% of the workers in some plants) cannot read or write."*

Chmura and company also cannot provide exact figures on amounts companies are spending on education and training activities. "Among the better known estimates are IBM's $700 million, GM's $300 million, and AT&T's almost $2 billion before divestiture." They settle for something within the range of aforementioned conventional estimates. If recent totals for informal on-the-job training are included, the figure increases to more than $200 billion.

Peter Drucker insists that training is a vital part of the corporate role, an observation fitting his feeling that industries are deluded when they believe they can hire educated people. For him, focusing that training is the critical issue:

> *"One of the big challenges ahead is not for business to spend more money on training -- it already spends more on training that the school system -- but to do a better job. Right now it's a scattergun approach. Exactly how to change it I'll leave to the experts. But if you start with the assumption that it is the job of the employer to train -- rather than believe that people come trained -- I think it would be better. We'd have apprenticeship programs, a different approach."*

Private Vocational and Proprietary Schools: Proprietary schools represent the second major private sector component. Information on privately-operated vocational schools, proprietary schools, may be a bit more reliable than figures on the more amorphous business training programs, largely because the proprietary schools have been required to meet licensing and registration requirements in many states. Still, the data are far from precise, as such elements as enrollments tend to be guarded information.

In 1982, proprietary schools comprised nearly two-thirds of the postsecondary schools with occupational programs listed by NCES.

In 1982, proprietary schools comprised nearly two-thirds of the postsecondary schools with occupational programs listed by NCES. Enrollments probably have increased substantially over the three million students reported for 1978, as have revenues, reported at $2.5 billion in 1973.

Most privately-operated vocational schools are small and many are single purpose. The typical size is 250-300 students. The average business or secretarial school enrolls 314 students; the average trade school, 157 students, and the average cosmetology school, 62 students. Many schools also have become part of national chains, operated by such companies as ITT, Bell and Howell, Control Data, and others.

Nearly half of the schools are accredited by one of the three proprietary accrediting associations (ASICS, ACCE, or NATTS). Some proprietary schools also are accredited by regional higher education accrediting associations (the same organizations that accredit colleges and universities) and offer college degrees. In this respect, the major difference between these institutions and the conventional independent college or university is that the latter is classified as a nonprofit organization.

According to Willford Wilms, as of 1982 the proprietary school sector was the largest in the country, with an estimated number of slightly more than 6000 residential schools (exclusive of correspondence programs), representing thereby nearly two-thirds of the postsecondary vocational institutions. Nearly three-quarters of all postsecondary vocational students were enrolled in proprietary schools that year.

Survival for these organizations hinges on their ability to remain attuned to both employer and student markets. Programs are added when industry's demands indicate, and they are dropped when student enrollments decline. They function in a competitive environment, not only among themselves, but with the public sector. Survival, according to Wilms, requires an emphasis on three priorities: "Marketing, marketing, and marketing."

Courses of study apply to a range of fields, including bartending, deep sea diving, broadcasting, barbering office and clerical programs, medical technologies, and many others. These programs tend to be directed to the job market, and they also tend to be limited to the skills and competencies directly required to function effectively within.

Proprietary programs are about half as long as some of the comparable programs in the public sector, although students may spend twice as much time in class each day (some public postsecondary vocational programs also operate on a class time principle.)

Postsecondary Program Coordination

Coordination among the various organizations and institutions involved in vocational education and in the larger sphere of human resource development is a frequently cited problem. The number of separate agencies and sectors with statutory responsibilities for skills training can run into the double figures. The problem was frequently identified as an issue by state officials interviewed during the course of the field work for this report, sometimes along with references to the lack of a comprehensive strategy for human resource development at either the state or federal level.

The absence of human resources policies is important. Like the educational system in general but perhaps a bit more so, occupational education is a vital aspect of social policy, relating

Like the educational system in general, occupational education is a vital aspect of social policy, relating both to economic development and state welfare policies. Yet, few examples exist of instances in which all of these sectors join together in the development of comprehensive programs.

both to economic development and to state employment and welfare policies. Yet, few examples exist of instances in which policy people in all of these sectors join together in the development of comprehensive programs. Not only are the crucial linkages missing, a great deal of misunderstanding about the resources, needs, and requirements of each other sector is apparent.

This carries over to planning in general, a function that in this country tends to be specialized and separated from related policy areas. Democracy is a wonderful form of government, but it makes long range planning difficult. While state vocational education agencies have an important role to perform in occupational education planning in general, the products of their planning usually have been parochial and oriented to Federal compliance requirements.

Planning in this country tends to be specialized and separated from related policy areas.

The federal government has maintained unusual hegemony in the vocational area, a presence that far outweighs the five to ten percent it contributes to total expenditures for vocational education. For years federal planning requirements have dominated state planning processes, and "state" vocational plans were frequently little more than compliance documents prepared and submitted to ensure the continued flow of limited federal dollars. Few states have true state vocational education plans, and fewer still have plans that are fully integrated with state economic and social policy priorities.

Some of this is beginning to change. Several western states have prepared or are in the process of preparing state plans of a new and different variety. One may harbor serious reservations about the efficacy, indeed, the possibility, of strategic planning as conceived in this country and still view this assertion of local initiative as a positive sign.

Parallel Structures?: Another concern is reflected in anxieties over the possible emergence of separate systems of occupational education, one represented by the traditional service providers; the other represented by largely federally-funded manpower training programs represented presently by the Job Training Partnership Act (JPTA). Various perspectives operate here.

Some view programs such as JTPA as vital "gap-fillers," positively augmenting and challenging the traditional system, and as useful prods for governors, under whose purview they fall,

to steer the system. Others see them as leading to a parallel and redundant structure.

The manpower training programs represent a departure from an approach in which federal funding has operated in conjunction with state vocational education resources, some suggest as a rudder on a boat. They comprise a federally funded initiative directed to individuals whose backgrounds and income place them at high risk of unemployment.

Present manpower training programs represent a departure from the past, as they now comprise a federally-funded initiative directed to individuals at high risk of unemployment.

The decision for the feds to move in this direction was influenced by perceptions of an unresponsive traditional system, attitudes that persist among many JTPA administrators. While community college officials insist that JTPA should contract with them for educational services, several program administrators argue they get more varied and effective services by shopping for them in a larger market.

It is difficult to know which side is right, although the weight of the argument ultimately seems to favor structural simplification. Dick Elmore's comments are to the point:

> *"These highly differentiated, parallel structures are well suited to the U.S.'s federal structure, vast territory, and regional economic diversity, as well as to a dominant ideology that attaches blame for failure to individuals and assumes little collective responsibility. The structures reinforce the illusion that young people have a vast array of choices and that success depends on individual grit, persistence, and motivation. In fact, the structures are so complex that they reward social class more than grit, and they perpetuate social inequities more than they repair them.*
>
> *"So, to be blunt, the federal government has 'solved' the problem of the unresponsiveness of vocational education to national priorities in part by creating parallel delivery structures and in part by using federal funding as a lever on vocational programs. Neither approach has been stunningly successful in the aggregate, although both have produced some significant state and local successes. The main result is a system of vocational preparation of vast and largely unfathomable di-*

mensions, well understood only by subgovernment insiders, and incomprehensible to nearly everyone else, including its clients."

The counter view is argued by Charles Radcliffe, who rejects the argument that the systems are parallel:

"It [JTPA] is not a training delivery system at all. Vocational-technical education [is the delivery agent]. The . . . JTPA system is really a brokerage system that does not deliver training but arranges for it through a variety of sources. Frankly, I like that arrangement. . . I like it very much for the reason that job training resources are very uneven in this country. . . So this is not a delivery system but a brokerage system, and I rather like the way it is able to utilize the best resources available for the purposes it serves. Our problem now is not to create new institutional capacity, or new administrative structures, but to learn how to use what we have effectively. More precisely, it is how to use the leverage of very limited federal funds to bring about the necessary improvements."

All of this concern with coordination should not conceal the presence of criticisms of another kind that apply to postsecondary programs. These include very high dropout rates and somewhat less than consistently impressive placement rates in training-related occupations.

Program Effectiveness

Policy-makers may seem bemused by the high dropout rates that characterize both postsecondary vocational programs and postsecondary education in general. The issue is a bit different here than at the secondary level, since the dropoutees are adults and there is a good possibility they are paying part of the cost of their education in the form of tuition (and may have dropped out temporarily to earn the necessary money to continue). Also, the positive values associated with the 1970s notion of "stopping out" carry over into the eighties.

Yet, there are problems with the lack of gain from the public investment when a student drops out, enrollments are limited by facility constraints, and other students are placed on waiting lists. The effect can be increased screening of applicants, leading to "creaming." The issue also evokes still unresolved philosophical questions about the social roles of colleges.

This relates in turn to traditional reliance upon placements as indicators of effective vocational programs. This criterion has applied to programs at all levels, high school and postsecondary, even though their goals may differ. The job-related placement measure stimulates considerable controversy. On one side are those who insist the educational institution's responsibilities involve the inculcation of competencies and not job placement. These are educational institutions as distinct from employment agencies, and while they can have some control over their own processes (educational) they have little control over others (placement). To determine their effectiveness as educational institutions on the basis of how well they perform as placement centers is unfair. Instead, their programs should be evaluated by measures that ascertain the existence or absence of the appropriate competencies upon completion (or at predetermined stages throughout).

Job placement as a measure evokes controversy. There are those who insist that the institution's purpose is the inculcation of competencies, not job placement. Others insist that a major objective of any vocational program should be to increase the share of placements in available jobs.

Others insist that one of the major objectives of any vocational program should be to increase its share of placements in available jobs. Thus, rates of placement in fields related to training should be retained as an effectiveness yardstick. In doing this, however, since outreach work takes additional time for the teacher, consideration might be given to rewarding faculty with additional compensation when they succeed. This also would create a more effective incentive than simple mandates or admonitions to place graduates in relevant fields.

Implicit in the placement imperative are certain assumptions about education, including the existence of a sort of self-correcting relationship, as the promise of jobs requiring certain educational qualifications induces students to enroll, and the absence of jobs, as the employment market saturates, diverts them and forces the programs to contract or close. This also would be the effect if programs or instruction were of poor quality or students did not get or retain jobs. Enrollments would decline as the word spread. The result should be a balance between supply and demand.

There are problems with the theoretical model. The first concerns the lack of reliable information on labor markets and employment opportunities for students. Public sector programs respond to at least two dimensions of demand: for trained workers emanating from industry, and of students for educational opportunities. Any balance between the two assumes adequate information on the part of students and a willingness to operate on the basis of that information.

Problems with the theoretical model stem from the assumption that students and faculty possess reliable information on employment opportunities for graduates.

Widely disseminated and reasonably accurate employment information is not a characteristic of the educational system, however, and a close relationship between knowledge and action is not always characteristic of human behavior. The result can be programs that continue to operate in response to demands of one type in an environment empty of demands of the other.

Widely disseminated and reasonably accurate employment information is not a characteristic of the system.

The net effect can be an oversupply of qualified applicants, contributing in turn to depression in starting salaries. Theoretically at least, unregulated vocational programs, or at least programs not accompanied with accurate information on employment demand, can have the effect of reducing labor costs for industry, probably to the disadvantage of the newly trained work force.

These are a few of the issues that militate against rapid mobilization in the war on economic deterioration. The examples here are more illustrative than exhaustive, and while the intensity of the debates may not match the explosiveness of open warfare, they usually are argued with emotions that occasionally may exceed the civility of a clan feud.

OCCUPATIONAL EDUCATION: ITS POTENTIAL AND PROMISE

"'I'll tell thee everything I can;
There's little to relate.
I saw an aged aged man,
A-sitting on a gate.
'Who are you, aged man? I said
'And how is it you live?
And his answer trickled through my head
Like water through a sieve.

"He said 'I look for butterflies
That sleep among the wheat:
I make them into mutton pies,
And sell them in the street.
I sell them unto men' he said,
'Who sail on stormy seas;
And that's the way I get my bread --
A trifle, if you please.'"

Lewis Carroll, *Through the Looking Glass*

Here it helps to briefly recount.

The major assumption about the economic future centers on the emergence of the global economy. This consideration must underlie virtually every assessment of the relationship between competitiveness and investments in human capital.

The major assumption centers on the emergence of the global economy. This consideration underlies every assessment of the relationship between competitiveness and human capital.

There are many causes for the shifts in this nation's relative economic rankings, not the least of which are changes of those in other countries. Typically the search is for easy answers and rapid solutions. American education has been a visible element, and its improvement has come to represent a vital economic strategy. In many ways this is good for education, and it is good for the country. And while education alone cannot explain all recent economic phenomena, and its improvement by itself will not eradicate the specter of adept foreign economic competition, no other solution can succeed without fundamental improvements in educational quality. Literate, trained, flexible, and adaptable workers are vital.

International economic dynamics are gamboling against a landscape of accelerating technological change. The full influence has not yet been felt, but it is sure to alter present conceptions of the work place, consumption, and the nature of economic competition. For purposes of education, the more sophisticated the technology, the more important are human intellect, judgement, and initiative. The greatest obstacle to technological exploitation is the scarcity of trained people.

The common denominators are strong core competencies, positive work attitudes, and a firm technical grounding.

Finding the right educational response is complicated by changing shifts in emphasis within the economy. Some sectors are becoming more prominent than others. Presently the service and information sectors are ascendant in the national profile, although the goods-producing industries with their associated service and information requirements will remain an important feature. All sectors will require competent workers.

The most rapidly expanding job sectors are those that will require much higher math, language, and reasoning capabilities than current jobs. But workers in all fields will be expected to read at advanced levels, understand complex directions, and be able to speak and think clearly. The important point is not so much whether new technology engenders need for more skills as that the evolving work place necessitates literacy and the capacity to grow and change. Training and education that are too occupation-specific will displace opportunities for more relevant learning while not providing either the skills required or the base for continued learning. The common denominators are strong core competencies, positive work attitudes, and a firmer technical grounding for all workers.

The demands of the emergent work place emphasizea new role for on-the-job training and carry concomitant implications for formalized vocational programs in education institution settings.

Worker productivity is a further consideration. Service industries are heavily reliant on human capital and, as such, less amenable to productivity increases than the goods-producing sectors. One part of the explanation for the decreasing proportion of the GNP represented by agriculture is the tremendous level of productivity among workers in that sector. A similar pattern attends manufacturing. In both cases the application of new technologies have had progressively greater effects. In the service sector technological change can have a similar effect, perhaps pushed by a diminishing labor supply. But the skill, dexterity, and knowledge of the populace are the critical aspects of service sector productivity and human capital. All fall within the province of education.

Changing national and regional demographics add one additional dimension. The rate of population increase will drop to a nearly unprecedented low over the remaining years of the century. These declines are certain to affect both the size and the composition of the work force. The population is not increasing as fast as before, and it is aging. Minorities, both native born and those who enter the country through immigration in response to demands for workers, represent a growing sector.

The implications for education are enormous. New emphasis falls on early acquired basic skills as a foundation for further training, education, or work. Positive work habits and attitudes also are required, as is the quality of adaptivity. More attention to technical and scientific competencies receives stress, along with a call for more help with small business development and entrepreneurship. Facility with foreign languages reaches unprecedented importance.

Just as the industrial sector is radically restructuring, so also must the educational system.

The demands of the emergent work place emphasize a new role for on-the-job learning and training and carry concomitant implications for formalized vocational programs in educational institution settings. Shifting career patterns and frequent re-entry will be common, creating needs for continuing education and retraining.

These conditions also stimulate a call for early exposure to career exploration, and they require new definitions of roles and greater coordination and integration of educational systems and programs. Significantly, contemporary essays rarely distinguish between "education" and "occupational education," implying that the classical separation is obsolete.

Two over-arching ramifications can be discerned. First, the relative shifts in emphasis among sectors of the economy will stimulate needs for skilled workers in traditional fields while calling for workers with the capacities to function in the new industrial environments. All are necessary, and all will be positively affected by more attention to the core competencies. Second, it is increasingly difficult to separate education into discrete academic and applied tracks, or to view a particular place on the educational spectrum as the point at which vocational or occupational education is "done." Hence, it is difficult to focus calls for change or improvement on one or two small facets of the enterprise. Essentially, all of education is involved.

Occupational education is less than perfect, especially that part called vocational education offered in the comprehen-

sive public high schools. Like the Kris Kristofferson song, vocational education is "A walking contradiction, partly truth and partly fiction." Its elimination is not feasible. Its reordering is.

American education and economic development always have been closely linked in the national culture, and the early penchant for the management and production principles that accompanied the formation of American industry also was experienced by educators, leading to the system that persists today. Just as the industrial sector is radically restructuring, so also must the educational system. New processes stressing flexibility, teamwork, change, adaptivity, and decentralized decision making are forming the new directions for industry; so must they for the educational system.

Ancillary problems blur responsibilities. All these programs ostensibly involve preparation for work, although their circumstances vary. Secondary vocational education is entangled with issues associated with basic skills and educational purposes, and its future, at least in the comprehensive high schools, is problematic. At the postsecondary level the issues center on relevance to the employment market, duplication, and coordination. Vocational education in the public schools is castigated; in the postsecondary sector it is lauded. In the former there are demands for its elimination; in the latter there are calls for its expansion.

Occupational education also occurs in the private sphere, but there has been little movement toward capitalizing on privately-based programs. Rather, the relationship more often than not is competitive and redundant. Vouchers are cited as devices to improve the quality of the public educational system through the introduction of competition into the equation. The effects of that are arguable, but vouchers do offer a way of expanding access without pointless program proliferation. Governors can use vouchers to provide students with a more varied menu of options without heavy investments in capital and teacher force expansion.

Ways must be found to more effectively unify and utilize the appropriate resources of each educational component. The issue here is not so much one of duplication and overlap, since to a large extent each state will seek to ensure the presence of a comprehensive range of educational services for its residents (although it should be possible to cooperate in the provision of some of the more costly and exotic programs through cooperative and

student exchange arrangements, regional telecommunications programming, etc.) Rather, it concerns systemic rationalization through arrangements that facilitate the fuller utilization of each of the parts. To the extent that the federal government, with its programs, including JTPA, Job Corps, and military education programs, and the corporate sector can be brought into this, the more impressive will be the result.

Effective competition in the international economy has become a national priority. Government leaders call for new experiments, new approaches, and new programs to achieve this goal. New relationships have formed between governments, the schools, and industries, increasingly supported by general revenues and special funds established for economic development, retraining, and others. But education for the American worker still accords with individual economics.

Training and retraining -- lifelong learning -- are considered fundamental to worker relevance and vitality. But unlike many of America's international competitors, the burdens associated with providing these opportunities are not as proportionately distributed. As one example, education is guaranteed -- publicly maintained in its entirety -- only through the twelfth grade, an entirely arbitrary point for most occupational training programs.

Similarly, eligibility for supported entry to many retraining and continuing education opportunities in this country continues to be based on financial ability rather than economic gain. In other countries state-or industry-sponsored continuing education programs are a prominent feature of the workaday world. When workers are laid-off they receive a voucher that can be redeemed in an industry-based or corporate training program.

"Leveling the playing field" is a popular expression, covering a variety of impressions of the fairness of international competition. This much seems certain: to the extent that this nation's competitors stress and support effective widespread basic and recurrent education programs, and this country continues to rely solely on the resources and initiatives of industry and individuals, the playing field will continue to tilt.

To the extent that this nation's competitors support effective and widespread basic and recurrent education programs, and this country continues to rely solely on the resources of individuals, the playing field will continue to tilt.

Popular conceptions of the future of work stress the importance of worker training and retraining on a continuing basis throughout one's life. They conjure images of the "learning society" and "life-long learning." But there must be thoughtful incentives to facilitate and encourage participation in continuing

education. These might be in the form of salary, promotional, scheduling, release time, and other work place changes. They also might include such non-monetary incentives as gains sharing and employer reimbursement of educational costs. Educational Training Accounts are still another possibility. Distant learning and telecommunications directed into the work place and home also might be part of this.

Perhaps the point is that while both the national government and the individual states have separated their economic and social policies, all are affected by an absence of a comprehensive and vigorous human resource program. Yet, whatever the solution to national economic problems, part of it lies in the full development and utilization of human capital.

This suggests a need to know more about the educational policies of America's international competitors, especially those directed to adults and the development of their intellectual capacities. There is a concomitant need for evaluations of various programs, such as California's Employment Training Program and Delaware's Blue Collar Jobs Act, both of which are funded by a fractional surtax on unemployment compensation rates, and which are directed to the provision of training for dislocated workers. These evaluations need to address the potential extension of such initiatives to the larger arena of recurrent education programs for the general work force.

In this political culture there exists a pervasive contradiction between long-range strategic planning and the evanescent nature of poltical administrations.

Finally, in this political culture there exists a pervasive contradiction between strategic planning, setting long-term goals and making long-term commitments and the evanescent nature of political administrations. Political elites come and go as governors and legislative leaders serve their terms of office and move on. Calls for comprehensive long-range solutions echo in the land. But few governors or legislatures can bind themselves to the assumptions of an earlier administration's plans.

Too often the result is repetitive planning exercises leading to desultory treatises and incremental policies.

The result is repetitive planning exercises too often culminating in desultory treatises and incremental policies. No one has found a solution to this problem. American conceptions of strategic planning could benefit from the application of a bit of planning. At the very least it seems that greater consideration should be given to inter-organizational or inter-agency planning structures. Serious thought also needs to be given to ways of linking plans across administrations.

The focus of this report is on improved economic competitiveness and continued economic development, but these are

means to a greater end -- a free and responsive society. While education has an important role to play in economic growth, it also has an important role in personal enlightenment. Changing demographics and the expanding global economy force a search for ways to involve all of the working age population in the work force, but that too should be a means to a greater end.

Americans insist that their educational system address an almost indescribable range of individual and social goals. There is no value in summarizing these here. In responding to all of these needs, however, the schools may find themselves unable to fully respond to any.

In the quest for a more relevant and effective occupational education, the goals of education for social understanding and participation, as well as for work, must not be lost. Similarly, the emphasis on equity must continue as an important value in its own right.

Many of the recommendations that follow extend beyond the normal boundaries of occupational education. This is inescapable, since all aspects of education are related. Preschool programs reduce the prospect of extensive dropout statistics and affect the size of the consequent need for corrective services at the high school level. The effective impartation of core competencies changes the nature of recurrent education requirements and eliminates the need for remedial services at the plant site and in the colleges and universities. And so on.

One further note -- educational change is costly, and it does not come easily. These recommendations are presented more on the order of a vision than as a series of discrete actions aligned with a specific implementation schedule and accompanied by detailed fiscal estimates. Although these suggestions will evoke a fair amount of agreement, they also are controversial. Pilot programs, experimentation, and the application of levers at sensitive points describe the most promising initial steps. With discussion, experience, involvement, and time, the system can be changed.

COMBINING ECONOMIC AND SOCIAL POLICIES IN AN OVER-ARCHING HUMAN RESOURCE POLICY FRAMEWORK

State human resource policy development should be within the purview of an interagency human

resource cabinet or council composed of directors of the relevant state departments, divisions, and agencies and educational institutions and sectors.

The Governor should assign the task of human resource policy development to this inter-organizational group. State human resource planning should occur within the context of this policy and future human resource initiatives should be analyzed for their consistency with this policy.

UTILIZING ALL EDUCATIONAL RESOURCES

All public educational sectors, programs, and curricula should be interrelated. Students should be able to move through the system without serious interruptions, diversions, or disjunctions.

The state should be able to utilize the entire educational network in the quest for economic sufficiency.

Vouchers can be an effective way of expanding the available range of educational services, and that is the value stressed here. Since there will be needs for occupationally-specific training in various occupational fields for high school juniors and seniors and needs for specialized educational services that are located out of district or cannot be economically provided by the public schools, vouchers that allow students to pursue such studies in either public or private educational or vocational centers should be made available.

Similarly, vouchers should be made available to students who elect to drop out of high school, allowing them to return at a later time to complete their high school program or enroll in a vocational-oriented training or retraining program.

In a related manner, the feasibility of state contracts with industries for the inclusion of non-

employees in their training programs or for training services should be explored.

Employers that offer basic job training, remedial education, or education that otherwise expands the general qualifications of their workers might be given tax credits for these services. Tax credits also might be extended to industries that donate, loan, or share equipment and work places for public educational purposes.

Education should be a society-wide issue, and all sectors should have a role. Each person completing military service, for example, should be assured at least a high school diploma, along with such other occupationally-specific training as is appropriate. Transitional assistance into the civilian work place should also be provided.

DEFINING NEW EMPHASES AND RESTRUCTURING EDUCATION

The structure of the economic system is changing both in terms of its emphasis and its processes. The new processes stress flexibility, teamwork, adaptivity, and decentralized decision-making. The educational system, designed at an earlier time and structured along principles that were more popular then, should be restructured along the following lines:

The objective of the public school program should be the establishment of core competencies that ensure the presence of effective communication skills -- thinking, reasoning, reading and reference -- knowledge of American and other civilizations and governments, facility with at least one other language than English, computation skills -- including proficiency in mathematics and the ability to utilize computers -- an understanding of geography and national and international economics, a firm grounding in the natural sciences, appre-

ciation for the arts, job acquisition and retention skills, and some entrepreneurship skills. A related goal should be the creation of a continuing interest in lifelong learning.

These competency goals are abstractions, but so are course requirements as indicators of learning. Mandated high school graduation requirements stated as Carnegie Units -- four years of English, three years of mathematics, three years of science, and three years of social science, for example, should be replaced by carefully designed specific competency standards keyed to the above core competencies, and which are measurable and can be utilized by educators in the instructional process. The acquisition of the necessary competencies should be demonstrated by appropriate assessment.

Detailed scheduling processes where learning is separated into daily periods and arranged as isolated elements throughout an educational week and an academic year should be replaced with more fluid scheduling practices keyed to a competency-based, integrated curriculum.

The curriculum must be changed to permit the infusion of these principles throughout. This means extending a more holistic, applied dimension to the curriculum and moving away from the division of knowledge into discrete subject components.

The acquisition of basic skills -- reading, writing, arithmetic -- should be stressed in the elementary school. Concerns about class size should apply as a first priority matter to these schools. No child should leave the elementary school without having mastered the basic skills.

Both effective education and the growing needs of families to have both parents actively involved in the work place lend special emphasis to pre-school and early education programs. The

concept of a pre-school through age 16 public school program should receive thoughtful consideration.

These changes also need to be accompanied by parent-funded before and after school latch-key programs at the elementary level. Provisions should be made for tuition waivers as needed so that all children can partake of these services.

Foreign language studies should be introduced at the elementary level, and students should be given the opportunity to pursue these studies throughout their school careers. The objective is fluency, and this will require substantially more than two years of belated study at the secondary level.

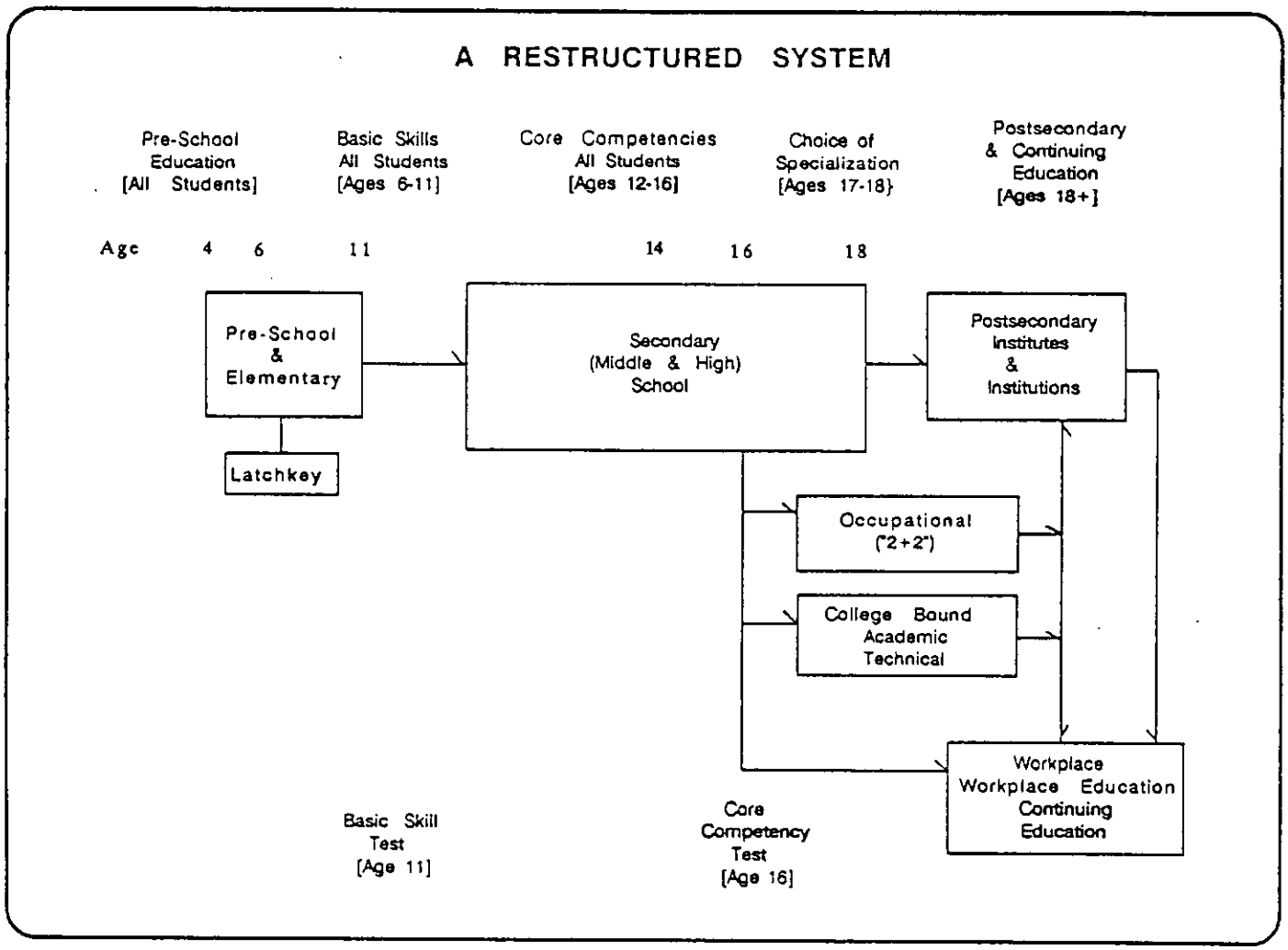
The basics should be amplified and expanded in the middle and junior high schools. Each student should be able to demonstrate mastery of the aforementioned core competencies by the end of compulsory school age (i.e., age 16, present grade-10)

Vocational programs leading to job-specific skills -- especially in the health, trade and industries, and technical fields -- should be removed from the comprehensive high school campus and replaced with courses of study coordinated with occupationally-specific programs of study in the community colleges and vocational centers.

There must be more programmatic connections between the high schools and the community colleges, as in the promising form of 2 + 2 programs that blend the junior and senior high school years of applied studies with related lower-division studies in the community colleges and postsecondary vocational center.

Programmatic connections also must exist between the community and four-year colleges (educational career ladder programs), 2+2+2 programs.

A schemetic rendering of such a restructured system appears below.



Entrepreneurship training should be available in the high schools and the community colleges.

More flexible, team-centered, adaptable, and decentralized decision structures such as are exemplified in the research on "Effective Schools" should be established at each school site. These models extend maximum management autonomy to people at the building level, define the managerial and instructional leadership responsibilities of principals, and involve teachers as professionals, not only in classroom instruction, but also in curricular and academic planning.

The teaching profession is divided into at least two major but disconnected segments: common school educators, generally labeled "teachers" (further divided into academic and vocational sectors), and college and university educators, generally labeled "faculty." One aspect of restructuring should involve movement toward a consolidated and mutually reinforcing teaching profession. The objectives should be fully integrated Kindergarten through college curricula, peer associations across sector boundaries, and the application of cooperative professional expertise to educational problems at all levels.

On a related point, teachers must be offered pre-entry education and in-service programs that prepare them to operate effectively in the restructured educational environment described here. Once they are in the schools, teachers should be afforded the perquisites of higher education faculty -- opportunities for involvement in professional activities, participation in school governance matters, professional leaves, and clerical and office support. If professional career ladders are devised, those for teachers in the common schools should be modeled after those in use in higher education.

Alternative routes to certification, and such assistance as tuition loans, scholarships, and for-

giveness provisions should be used to entice more people into teaching should be provided.

Demands for trained workers and the effects of competition with industry augur a diminishing pool of qualified people as teachers in specific occupational education programs. This accentuates the need for more general high school vocational programs with an emphasis on transitional service and greater reliance on area skill centers and community colleges for occupational training.

States should use the impending period of extensive teacher retirements to replace their high school vocational staffs with teachers prepared to function in a more general educational setting, one that allows for the melding of the applied and theoretical dimensions.

Customized education programs are popular in that they merge governmental and industrial interests through the provision of industry-specific programs for workers. Community colleges and VTIs have assumed the national leadership in this field. Funding policies should be designed to expand the availability of such programs in the state.

Consideration also should be given to the need and feasibility of multi-state regional education programs that would permit inter-state cost-sharing and student access arrangements in highly sophisticated and costly program fields.

Community colleges, in particular, carry an important responsibility for assisting with the problems attending rural community development. This means providing assistance with business plans, surveys, small business management, semi-

nars on entrepreneurship, etc., as well as taking an active part in community planning and development activities.

Ensuring the presence of comprehensive educational services in rural areas is a particularly important issue in the western states because of the distances involved. Telecommunications and distant learning systems need to be given a higher priority in state educational planning.

Institutions of higher learning need to consider changing their reward structures to encourage greater faculty involvement in applied planning, technology transfer, and state economic development issues. States have a concomitant opportunity to influence this process through budgetary contracts for such assistance with their colleges and universities.

EXPANDING INDUSTRY, EDUCATION, AND GOVERNMENT COLLABORATION

Business must become more fully involved throughout the education cycle, assisting with program planning, advice, equipment and work place sharing, business-education, teacher exchanges, and other such programs.

There must be greater accuracy in articulating industry's needs for worker education. Employers should be invited to participate with educators and representatives of the general public in the aforementioned competency standard identification efforts.

There should be cooperative demonstration programs, state equipment pools, demonstration centers for the retraining of dislocated workers, model

centers for vocational education for older workers, and industry-education partnerships for training in hi-tech occupations.

Business must be more closely involved in the development of better information to students on emerging job shifts to enhance program planning.

ENHANCING PROSPECTS FOR LIFELONG LEARNING

This nation and this region must strive to move the presently rhetorical expression, "A Learning Society," into reality. Ways need to be found to more effectively communicate the value of continuing education to Americans. The concept of life-long learning should be made a profoundly rooted principle of American life.

Continuing education and worker retraining programs in many of America's competitor nations are widely viewed as more extensive and effective than those here. The WGA should undertake an early and thoughtful examination of these programs and policies.

It probably is presumptuous to assume that all people will naturally avail themselves of opportunities for continuing education if these opportunities are simply made available. Attention also must be directed to incentives in the form of released work time, organizational recognition, salary increases, and promotions, as well as others, as inducements for employees to partake of these services.

Scheduling changes need to occur in the work place, in the form of expanded flex-time and part-time arrangements to encourage the continued presence or the return of older workers. Re-entry and recurrent education programs should be provided to accommodate their needs.

Present assumptions that publicly funded educational services after high school must be need-based should be re-examined. Consideration should be given to a stronger involvement of government in the funding of adult education, training, and retraining programs.

Other possibilities, such as payroll and employment compensation tax deductions, and employee training accounts as ways of funding adult education should be considered. Greater consideration also might be given to the use of tax credits for workers who pursue continuing and recurrent educational programs.

ENSURING EQUITY

Equity and changing demographics require expanded and improved educational opportunities for all Americans.

This means better systems for addressing the educational needs of individuals, and it means access to those systems for all.

All, in this case, applies not only to racial and ethnic minorities but to such other disfranchised groups as the disabled.

The report concludes at this point. It would be nice to end on a positive note. Unfortunately, that is not entirely possible. While there is much that is innovative and exiting occurring in the occupational education field, much of it is happening outside of the formal structure. And in the public sector, the innovations are disproportionately represented at the postsecondary level and in the consolidated vocational centers. Unfortunately, full recognition is unlikely to transpire until roles and programs at the secondary level are rationalized. That is probably the major finding, and the major message, of this report.

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