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ABSTRACT

This report traces the historical evolution of vocational education in the United States and the impact of federal legislation in guiding that evolution. It states that since the earliest days of the country, vocational-technical education has been a largely decentralized, state- and locally-governed enterprise. However, federal initiatives affecting vocational-technical education programs began to emerge in the latter part of the 19th century. Most of these changes have come about since 1917 when the first major federal legislation for vocational-technical education, the Smith-Hughes Act, was enacted. Following coverage of the Smith-Hughes Act and its impacts through the years, the report outlines the Vocational Education Act of 1963, the federal initiatives undertaken during 1964-1976, the Carl D. Perkins Vocational Education Act, and vocational-technical education in the 1990s, especially emerging trends such as academic and vocational integration, and tech prep. The report traces these initiatives and offers an analysis of where vocational-technical education is headed in the next century. Contains 26 references. (KC)

VOCATIONAL-TECHNICAL EDUCATION:

MAJOR REFORMS AND DEBATES 1917 - PRESENT

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UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF VOCATIONAL AND ADULT EDUCATION

THE ASSISTANT SECRETARY

Dear Colleague:

This report was prepared as part of United States participation in an international study on "The Changing Role of Vocational and Technical Education" conducted by the Organization for Economic Cooperation and Development. The study focuses on innovation and change taking place in vocational-technical education.

This is a very important time for vocational-technical education. It is a time filled with new challenges and opportunities that can strengthen and reshape the delivery of vocational-technical education for all students in their preparation for work. Impetus is given this systemic change by two key initiatives of the President--the School-To-Work Opportunities Act, that stimulates establishing comprehensive school-to-work systems in the States and localities; and Goals 2000: Educate America Act, that addresses education and occupational skills standards essential to quality work force preparation.

The report puts into historical perspective the impact of Federal legislation in guiding the evolution and configuration of vocational-technical education in the United States. Since the earliest days of the Republic, vocational-technical education has been a largely decentralized, State and locally-governed enterprise. Federal initiatives affecting vocational-technical education programs began to emerge in the latter part of the nineteenth century. Most have come about since 1917 when the first major Federal legislation for vocational-technical education, the Smith-Hughes Act, was enacted. The report traces these initiatives and offers an analysis of where vocational-technical education is headed as we approach the 21st century.

I believe the report provides the context for a national work force preparation system that builds on the foundation laid by vocational-technical education. In explaining how Federal legislation has impacted the structure and provision of vocational-technical education, the report informs those unfamiliar with this aspect of American education and training. For those already acquainted with or working in this area, the discussion of the past and present provides a background for understanding some of the current programmatic issues and challenges our Nation faces in helping our citizens prepare for work in a globally competitive economy.

Sincerely,

Augusta Souza Kappner

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Vocational-Technical Education:
Major Reforms and Debates
1917 - Present

Executive Summary

Vocational-technical education provides individuals the education and training they need to prepare for an occupation or career requiring less than a baccalaureate degree. Although vocational-technical education is referred to as a "system," this is somewhat of an aberration in that, unlike most systems, this one has no uniform standards, curriculum, or accountability measures. In addition, vocational-technical education, like all education in the United States, has traditionally been decentralized and remains the domain of the States and their local communities. The federal government has played and continues to play a catalytic role in education by providing States with funding and leadership. This Federal-State-local tripartite, each with its own distinct needs, has produced vocational-technical education as we know it today.

The Federal role in vocational-technical education was clarified with the passage of the Smith-Hughes Act in 1917. The purpose of the act was to provide Federal financial aid for vocational-technical education in public secondary schools.

Although vocational-technical programs were incorporated into traditional secondary schools, each went its separate way, thus undoing any hope of a comprehensive approach. In fact, various components of the Act reinforced the isolation between vocational-technical education and other parts of the high school curriculum.

Besides contributing to the segregation of the high school curriculum, the Smith-Hughes Act was restrictive to students in Federally funded vocational-technical education courses, perhaps to protect practical instructional programs from being dominated by the academic elite. Federal policy and Congressional initiatives concerning passage of the Smith-Hughes Act have been very influential in determining the current status of vocational-technical education.

From 1917 to 1963 the basic elements of Federal vocational-technical education did not change. In 1963 Congress passed the Vocational Education Act of 1963, designating segments of money for specific purposes, commonly referred to as "set-asides," in an effort to expand influence over State programs. In stating its concern for the poor and the handicapped, a major policy shift - a social one - had occurred. Thus the seed was planted for regarding vocational-technical education as a haven for underprivileged minorities.

After the 1963 Act, stringent Congressionally mandated Federal fiscal controls increased. The 1968 Amendments included provisions for exemplary programs, cooperative education, and work study, thus expanding the 1963 Act. The Educational Amendments of 1976 reflected the concern for improved planning, improvement of programs, and support to overcome sex-role stereotyping. The National Assessment of Vocational Education (NAVE) authorized by the 1976 amendments was designed to draw attention to: the ambiguous provisions of the Federal legislation; the Federal Government's attempt to do too much with too little; and the underrepresentation of disadvantaged populations in programs offering a strong possibility for career employment.

In response to the findings of the NAVE study, completed in 1980, Congress passed the Carl D. Perkins Vocational Education Act of 1984. This act placed more emphasis than earlier legislation on access, program improvement, cooperation between the public and private sectors, advanced technology and training, and retraining and upgrading of workers. Two priorities of the law were: assisting States in modernizing and developing quality vocational-technical education programs and improving access to vocational-technical education programs, especially for special populations.

Federal vocational-technical education legislation played a major role in shaping vocational-technical education in the United States. . Its provisions lead to the separation of secondary vocational-technical education from other education programs and to the misconception that vocational-technical education was the logical means for solving the problems of disadvantaged youth.

The publication of *A Nation at Risk* in 1983 was very instrumental in giving national focus to the education reform movement in our country. While the report focused on college preparation curriculum, vocational education was not addressed. However, in the 90s there has been a profusion of reports focusing on work force preparation, thus shedding a new light on the importance of vocational-technical education in the debate on education reform.

In 1990 Congress passed the Carl D. Perkins Vocational and Applied Technology Education Act (Perkins II), contributing to a significant policy shift in Federal funding for vocational- technical education. To reach the goal of preparing a competitive and highly skilled work force, Perkins II emphasizes the integration of vocational-technical and academic education and articulation between the secondary and postsecondary levels as embodied in the provisions for tech prep and public-private partnerships.

> The integration of vocational-technical and academic education is the planned coordination and sequencing of courses, curricula, and/or programs so that students can develop and achieve both vocational and academic competencies. It strives to bring vocational and academic education into an equal relationship. The inclusion of integration of academics to the traditional separatist approach of vocational-technical education in the United States brings Federal vocational-technical legislation almost full circle in terms of the original intent of the Smith-Hughes Act for a "comprehensive" framework for vocational-technical education.
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> Tech prep education is an alternative to the college prep course of study. It prepares students for highly skilled technical occupations that allow either direct entry into the workplace as qualified technicians or continuation with further education leading to baccalaureate and advanced degrees. Tech prep is a four-year sequence of study beginning in the eleventh year of high school through two years of postsecondary occupational education culminating in a certificate or associate degree. There is a national surge of interest in tech prep, especially among community colleges and high schools.

The transition from school to work, with public-private partnerships playing major roles, currently focuses on work force quality and work force preparation. Students in school-to-work programs benefit by gaining career identities. Connecting schools with respected employers enhances the social status of vocational-technical education.

The three programmatic cornerstones of Perkins II focus on the integration of vocational-technical education with academics, articulation between secondary and postsecondary institutions, and partnerships with business and labor. These approaches represent significant departures from the traditional focus on separate vocational-technical education. Although Perkins II reflects a dramatic and positive shift in Federal policy, there still remains a vacuum for a comprehensive system to prepare our nation's youth for employment. It is important to expand the reform effort outlined in Perkins II and to offer incentives to encourage the involvement of whole schools. To achieve reforms in the large and complex education entities found in the United States, Federal as well as State and local cooperation and leadership is necessary. Perkins II points in that direction.

Vocational-Technical Education: Major Reforms and Debates 1917 - Present

I. Introduction

Vocational-technical education is broadly defined by the Federal Government as preparation for employment in positions requiring less than the baccalaureate degree. It is offered mainly in secondary schools, area vocational schools, and community colleges, though, as noted below, there are a large variety of public institutions involved with vocational-technical education. For the most part, the range and rigor of vocational courses in secondary schools is determined locally, not by State or Federal requirements. Area vocational schools serve a region usually larger than a single school district and enroll part-day secondary students as well as adults. Typically, the programs in area schools are more sophisticated than those to be found in comprehensive secondary schools, with the notable exception of a small number of full-time vocational high schools, found mainly in large cities and which generally have a specific industry bias. Some States have specialized vocational programs in comprehensive high schools which draw students from other schools. By drawing from a larger pool of students, these programs can enjoy some of the benefits of scale enjoyed by regional or area vocational schools and still operate within the comprehensive high school context. Comprehensive community colleges provide the 13th and 14th years of schooling and offer vocational certificates and associate degrees. Their programs cover lower division (first two years) of the baccalaureate program and more sophisticated vocational instruction than that which is given in most secondary and regional schools. Technical community colleges offer only vocational-technical programs. Community colleges also serve adults in shorter-term programs and, in some States, also enroll a few secondary students on a part-time basis.

In the United States, vocational-technical education is almost never a complete program in itself. In both high schools and colleges, students who identify themselves as "vocational" tend to take more non-vocational courses than vocational. Although almost all secondary students (98 percent) take at least one vocational education course at some time in their secondary school experience, less than 15 percent average one or more courses a year (out of the five to seven courses that comprise a full load). An even smaller percentage are enrolled in meaningful sequences of courses which could legitimately be considered to constitute a "program."

In any discussion of vocational and technical education programs in the United States, it is important to note at least two dominant characteristics, the number and diversity of these programs and their decentralized governance arrangement.

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Size and Diversity

The United States is a large and complicated society. Its magnitude and complexity are mirrored in its vocational-technical education system. In total, vocational-technical education is offered by more than 33,500 public and private institutions. In public secondary schools, it is provided by 11,335 comprehensive high schools[1], 225 vocational high schools, and 1,395 area vocational centers. In public postsecondary schools, it is provided by 720 degree-granting community colleges; 162 technical institutes which grant degrees in technical fields; 504 postsecondary area vocational schools which do not grant degrees, 308 postsecondary schools serving only one industry, and 70 postsecondary skills centers for disadvantaged youth. In addition, there are approximately 7,400 private proprietary schools, of which 2,400 are postsecondary. Vocational-technical education is also provided on a large scale by employers, labor organizations, the military, and correctional institutions. In addition to these more traditional forms, short term job training funded by the Job Training Partnership Act (JTPA), welfare-to-work programs supported by the Family Support Act, and in several States, State-funded training programs aimed at economic development are also in place.

Decentralized Governance

The second major characteristic of this country's vocational-technical education system is its highly decentralized decision-making structure. The United States' Constitution places no responsibility on the Federal Government for the functions of education. Decisions on these matters are considered the appropriate province of the individual States. The States, with few exceptions, have determined that most education decisions are best left in the hands of the locally elected school boards in the 15,000 public school districts in this country and thousands of other State and local governing bodies. Even within school districts there is great variability, and many vocational-technical curricular decisions are frequently made at the individual secondary or postsecondary school site.

A Vocational-Technical Education System?

These factors have resulted in a vocational-technical education "system" which lacks the attributes normally associated with a system. To the extent that a function of an education system is to maintain standards of skills development, a uniform curriculum, and agreed-upon accountability measures, the United States vocational-technical education programs do not comprise a system. Compared with postsecondary preparation programs in this country and compared with most other industrialized nations, there is an absence of uniform, agreed upon standards in applied learning in the United States.

A partial explanation for the lack of "system" can be found in the ways that vocational-technical education has developed, compared, for example, to the development of college preparatory

[1] Although vocational-technical education is offered in virtually every high school, very few offer a wide range of programs. Only about five percent of the comprehensive high schools offer more than six programs.

education. In college preparatory programs, standards are set and monitored by the upper strata of four-year degree granting colleges and universities. A secondary student in a rural district of the agricultural State of Iowa can become qualified to enter Harvard, provided his district offers the complete college preparatory program. In academic fields, there are certain nationwide centralizing pressures from the college/university admission process and, to lesser degrees, from textbook publishers and test manufacturers. The required curriculum is universally known and generally available in almost all secondary schools, measurement of the required standards of student performance is common practice, and the norms are accepted by the general population.

In the case of vocational-technical education, there is very little in the way of a standard curriculum that is accepted by secondary schools and two-year colleges. Some secondary schools have exceptional programs, but many provide inadequate programs and some have none at all. Likewise, most two-year colleges will have some vocational-technical programs, but program specialties and depth of coverage within specialties reflect local decisions almost completely. A program in machining in one community college may contain six required, intensive courses; be based on strong math prerequisites; and use the latest Computerized Numerical Control (CNC) equipment; while a neighboring community college may offer two courses only, both of an exploratory type, have no prerequisites, and employ obsolete equipment.

An additional explanation for the wide variability in quality of vocational technical education, as compared with academic education, is the lack of assessment on a school-by-school basis of the proficiency of program graduates. When the Federal Government and the States report on the performance of high schools, the assessments invariably utilize indicators for progress in the academic portion of the curriculum (e.g. Scholastic Aptitude Test (SAT) scores, college going rates, percentage of students taking college preparatory courses). Almost nothing of a practical or applied nature is assessed.

An exception to the lack of standard curricula and absence of skill assessment is found in formal apprenticeship programs. Basic content is specified by State Apprenticeship Councils or the Bureau of Apprenticeship and Training, U. S. Department of Labor. Standards apply to program content and to a rigorous process of final examinations. Work skills as well as academic learning are evaluated. However, apprenticeship forms only a minuscule fraction of vocational-technical education in the United States. In 1988, only 38,819 apprentices completed their required training and of these, sixty per cent were in the field of construction trades.

In sum, vocational-technical education programs in the United States lack standards for skill development, fail to have coherent, uniform curricula and are unable to systematically assess the proficiency of program completers.

A discussion of the historical antecedents to the current provision of vocational-technical education in the United States follows.

II. Historical Perspective on Vocational-Technical Education in the United States

Early Context

It is important to recall that in the United States education is constitutionally the province of the individual States. It is equally important to note that most States subscribe to the concept of local control and have delegated much of their responsibility for education policy-making to locally-elected school district governing boards. Thus three major competing policy forces have forged vocational education programs as they exist today -- the unique needs of the local community, the policies and purposes of each State, and the overarching goals of Federal Government programs. Unlike the development of vocational programs in other countries where trades, craftsmanship and apprenticeship have had a more central and unifying presence, in the United States vocational programs have had diffuse development, effected by the often competing interests of Federal, State and local priorities.

In vocational-technical education, the commonalty of programs across State and local lines, to the degree such commonalty exists, largely derives from 75 years of Federal Government leadership.[2] In fact, the main forms of vocational-technical education in place today remain remarkably similar to vocational education envisioned by the Federal Government in the first quarter of the century.

The creation of a National policy on vocational-technical education was in response to multiple concerns. First and foremost, vocational-technical education was seen by the Congress as an integral element in building a strong work force as part of the overall national defense strategy. A number of important forces were at play demanding a better educated work force. After the turn of the century, the reduction in child labor and the continuing immigration of manual laborers and their children created a pool of youth determined to have secondary education. However, the almost exclusive emphasis on classical liberal arts curriculum fit these new students and their needs poorly. Additionally, economists decried the shortage of skilled labor. Business leaders, represented by the National Association of Manufacturers, complained that the factory system had largely destroyed apprenticeship as a source of skilled labor. Finally, the start of World War I cut off a traditional source of the highest skills -- highly skilled artisan immigrants from Europe.

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[2] For the purposes of this paper the authors have chosen to concentrate on the history of federal legislation effecting vocational technical education. The federal legislation has provided the major centralizing policy force in this highly decentralized operation and, for a relatively small financial contribution, has had a disproportionate impact on local providers. One long-time observer of United States vocational education refers to the federal role in vocational education as "one very small tail wagging one very large dog." Finally, if there is to be a new, more coherent federal vocational-technical policy, the federal arena is the logical place to start.

Educational reformers responded to these demands by arguing for the establishment of "comprehensive high schools" in which students would learn both theory and practice and in which the dignity of manual work would be valued.

Both labor, as represented by the American Federation of Labor (AFL), and business felt it made sense to establish a network of free-standing vocational schools, each with a bias toward a particular industry. As is true of full-time vocational schools in some of the major cities of the United States, the curriculum would be balanced between preparation for work skills and instruction in the liberal arts. Eventually, this alternative school system could have become the basis for centers of instruction in applied science and technology. However, both business and labor feared the consequences should such schools become dominated by one or the other group. Therefore both agreed upon the incorporation of vocational programs into conventional secondary schools as less hazardous to the ongoing agendas of their respective organizations. Comprehensive high schools were seen as neutral ground by both parties. At this early date many in the labor movement voiced the fear that differentiation of schooling into academic and vocational tracks would accentuate stratification of society.

As it turned out, the comprehensive secondary schools of educational reformists' dreams, with very few exceptions, were comprehensive in name only. Most schools gradually evolved into the United States version of a "dual system," consisting of one branch for pupils who planned to enter postsecondary educational institutions and one for students who were preparing for the world of work.[3] The early fears about separation and stratification were slowly realized.

The Smith-Hughes Act of 1917

The strongest influence on the establishment of an instructionally-segregated system was the Federal Government itself. Its instrument was the first vocational education act, the Smith-Hughes Act of 1917.[4] Several specific elements of the Act contributed to the isolation of vocational education from other parts of the comprehensive high school curriculum.

Separate State Boards for Vocational Education

In order to receive Federal funds under Smith-Hughes, each State was required to establish a State board for vocational education, "...having all necessary powers to cooperate... with the Federal Board for Vocational Education." Each State board was required to establish a plan:

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[3] A third track, the general education track also evolved. This track most frequently consists of a set of unrelated, nonsequential, watered-down courses which, with minimum effort, permit students to stay in school and graduate with a high school diploma. Students in these programs are prepared neither for postsecondary education nor for the world of work.

[4] Indeed, this act was the first instance of federal categorical aid for schools in the history of the United States.

" showing the kinds of vocational education for which it is proposed that the appropriation shall be used; the kinds of schools and equipment; courses of study; methods of instruction; qualifications of teachers;...plans for the training of teachers....Such plans shall be submitted by the State Board to the Federal Board of Vocational Education. The State Board shall make an annual report to the Federal Board for Vocational Education...on the work done in the State and the receipts and expenditures of money under the provisions of this Act." (Section 8)

The term "State plan" has been a misnomer from the outset. The plan does not arise from State policy and leadership, but from the mandates contained in the Federal law. The plan was not intended, and did not serve to establish State priorities, describe organizational systems, identify State goals, activities, or accountability mechanisms. Instead, the purpose was to serve as a contract between the State and Federal governments, assuring adherence to Federal requirements and procedures.

The requirement to establish a Board of Vocational Education in some States led to the establishment of a board separate from the State Board of Education. Thus two separate governance structures could exist at the State level. This in turn fostered the notion of vocational schools as separate and distinct from general secondary schools, and of vocational education as separate from "academic" education.

Separation of Funds

Smith-Hughes spelled out the Federal Government's intent that vocational teachers should be "...persons who have had adequate vocational experience or contact in the line of work..." (Section 12) in which they were to hold classes. Federal funds, as well as State and local funds for vocational education, as specified in the State plans, could be spent on salaries of teachers with vocational experience, but not on salaries of academic teachers. Although the Act's intent was to avoid "raiding" of vocational funds by other segments of the comprehensive high school, the result was to separate the vocational education program from the mainstream of a school's operations.

Segregation of Vocational Education Students

The key restrictive section of the Act applied, however, not to teachers but to students. Smith-Hughes required that schools or classes giving instruction "to persons who have not entered upon employment shall require that at least half of the time of such instruction shall be given to practical work of a useful or productive basis, such instruction to extend over not less than nine months per year and not less than thirty hours per week." (Section 12) Thus, the law required the following: if a high school student was taught one class by a teacher paid in full or in part from Federal vocational funds, that same student could receive no more than fifty per cent academic instruction. The Federal Vocational Board was quickly able to extend the control of students' time to what came to be known as the 50-25-25 rule: 50 per cent time in shop work; twenty-five per cent in closely related subjects, and twenty-five per cent in academic course

work. This rule became a universal feature of State plans from the 1920's to the early 1960's.

The 1917 Act was virtually silent on manpower projections and on centralized assignment of training quotas to school districts. If the driving force of the Act was labor shortages, one would expect to contain processes to identify shortages and time-controlled means to meet them. Surely the 50-25-25 pro-ration of students' time fits the development of some kinds of skills better than others. The inflexibility of the provision was a handicap, not an advantage, in a national policy of work force preparation. The ultimate effect of the Act, although never stated explicitly, was to identify certain students and teachers as "vocational," and to protect the salaries of the latter through reserving for them (exclusively) certain amounts of Federal money matched by State and local contributions. One may reasonably assume that the authorities saw programs of practical instruction so endangered from a dominant academic elite that they required such protection by Federal law. The end result, however, was to segregate academic teachers and students from vocational teachers and students and to strengthen the social alienation that early critics of these steps had feared.

Segregation of the Curriculum

Predictably, vocational teachers emphasized job-specific skills to the almost complete exclusion of theoretical content. One result was that the intellectual development of vocational students tended to be limited at a relatively early age. Another result was that students so trained were ill-equipped to pass skills along in the workplace or to learn new skills when their jobs disappeared through technological change. High schools in the United States then, offered little to students who were interested in technical subjects (conceived as subjects that offer close harmony in the more or less simultaneous interplay of theory and practice).

In addition, programs were established within vocational education which further segregated students by subject matter. This segregation into Agriculture, Homemaking, and Trade and Industrial Education segments in the initial legislation has persisted for most of this century. The effect of this separate designation was more than basic distinctions among academic classes such as history and mathematics. These programs were distinguished not only from the "academic" but were implemented in such a matter as to distinguish each program from all other vocational programs. The impact of this separation has been felt through subsequent decades in the development of separate teacher training programs, separate teacher organizations, and separate student organizations. Even within vocational education, the impetus in the original Act led to splintered programs.

Smith-Hughes Through the Years

The policies and positions taken by the Congress in their enactment of Smith-Hughes have been extraordinarily powerful forces in determining the current status of vocational education. Remarkably, these central segregating and separating provisions have proven to be largely impervious to change in spite of the large-scale shifts in emphasis which have

occurred since its original enactment. In fact, these provisions were later augmented and reinforced by subsequent actions. It will be useful to examine briefly how the emphasis on vocational-technical education has been altered through the years.

While the policy emphasis at the Federal level moved from the original focus on national defense to the severe unemployment problems in the 1930s, Federal influence in vocational programs remained largely unchanged. However a significant change did occur in the 30's -- the emphasis on vocational courses in what were then called "junior colleges" (which later evolved into community colleges).

In the next decade[5], the War Production Training Act, as implemented by the War Manpower Commission introduced the concept of "open-entry, open-exit" programs. A collateral Federal effort was the Rural War Production Training Act which emphasized agriculture related programs. By this time it had become abundantly clear that within vocational-technical education three restricted and restrictive program tracks were in force: a general education effort, a vocational education program, and various job training programs.

During the 1940s and 50s, the program of vocational education which had developed in the early 1900s from the need to "train boys and girls for work," envisioned as national defense strategy in the 20s, focused on unemployment in the 30s, now encountered both the need to assist with the war effort during the 40s, and the need to provide a transition to a peace-time economy. During this period and into the 1960s, States experienced first the burgeoning of industry related to the war effort, and later, growth in the junior college system and adult education.

Influences on vocational education during the 1950s were characterized by light industries springing from new technology, the emergence of the health occupations careers, and the inclusion of work experience as an appropriate part of public education. In addition, social policy at the Federal level led to two amendments to the George Barden Act of 1946. The first amendment, Title II, Vocational Education in Practical Nursing, was a reflection of a Congressional interest in "the health of the people." Several years later, Title VIII sought to stimulate technical training programs in the wake of the launching of Sputnik[6].

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[5]As vocational programs continued into the 1940s, problems plaguing vocational education were disturbingly similar to those cited today: 1) lack of adequately trained teachers, 2) insufficient funds, 3) failure to accept vocational education course w by other segments of education; 4) difficulty in achieving a workable balance between vocational and general education; 5) inadequacy of planning at all levels; and, in some states, 6) a surprising resistance by junior colleges to accepting vocational education as an integral component of their mission.

[6]An important parallel development at the end of this decade was the federal National Defense Education Act (NDEA) which brought federal dollars for mathematics, science, foreign languages and other general education programs. For 41 years states had accepted federal education dollars only for vocational programs. Reluctance to accept federal dollars in other areas stemmed from the notion that education was the province of the states, and with federal dollars would come federal domination. Despite the burden of federal prescription, which was a major issue among national vocational education directors and chief state school officers, states did accept federal intrusion into the "academic" areas prescribed in NDEA.

During the 1960s, vocational education experienced especially heavy enrollment growth. All the while, technological advances were producing increasing employment dislocation. The gap between the affluent and the disadvantaged widened; poverty in areas of economic depression could not be ignored. Congress responded by enacting the Manpower Development and Training Act of 1961 (MDTA), followed by the Vocational Education Act of 1963 (VEA). It is surprising to note that almost 50 years after the Smith-Hughes Act, in spite of all the intervening changes, the definition and purpose of vocational education as set out in the new VEA remained largely the same.

In sum, the essential nature of Federal vocational education remained constant from 1917 until 1963, though authorizations for Federal allocations were raised under both the George-Barden Act of 1946 and the National Defense Education Act of 1958. Measured in terms of dollars and enrollment, this early form of categorical assistance was successful. In 1917, just before implementation of Smith-Hughes, there were 200,000 vocational students in the United States and something less than $3 million dollars was spent annually on their training. Forty years later, enrollment had increased to 3.4 million students and expenditures stood at $176 million. Smith-Hughes required dollar for dollar matching of Federal money by the States, local governments, or some combination thereof. As the decade of the 1950's closed--the last decade for the Smith-Hughes version of categorical intervention--Federal funds were over-matched by both State and local funds, taken separately.

On the central, most traditional dimensions, the Smith-Hughes formulas had to be considered an enormous success by its strongest advocates. It had directly pumped hundreds of millions of dollars into the vocational education system. Its matching requirements had generated hundreds of millions of additional State and local funds all devoted to vocational education programs. Even more impressively, vocational education enrollments had grown seventeen fold.

During this period of phenomenal growth, the whole arena of vocational education policy was left pretty much to the vocational education practitioners. There are several reasons for this phenomenon. Historically, vocational-technical education has not been a high priority area for the typical education reformer. Much more attention has been given over the years by education reformers and policy makers to concerns over the quality of preparation for postsecondary education. Several factors contributed to this benign neglect. Most educators in positions to exercise authority at Federal, State or local levels have little or no experience with vocational education. Additionally, the academic research community has shown scant interest to the issues facing vocational education. Finally, until recently, there have been few pressures from the community to materially change the way vocational education is offered. As a result, policy influences affecting vocational education have been left, almost by default, to vocational educators. Because the Federal purposes in vocational education appeared to coincide so closely with the wishes of the vocational education community, i. e., to protect and expand practical training in secondary schools in the United States against the assumed opposition of the academic elite, the Federal acts were, practically speaking, self-enforcing.

The Vocational Education Act of 1963

In 1963, Congress passed a new vocational education act, called (simply) the Vocational Education Act of 1963. The designation of portions of Federal money for specific purposes -- called "set-asides" -- was introduced. In this manner, the Federal Government sought to expand influence over State programs. The Act provided that out of its allotment each State had to spend 25 percent either on (a) training for persons who had completed or left high school or (b) construction of area vocational school facilities, or both.[7] A second set-aside was for experimental programs "...to meet the special vocational education needs of youths, particularly youths in economically depressed communities, who have academic, socioeconomic, or other handicaps that prevent them from succeeding in regular vocational education programs." (Section 4c)

The 1963 Act stated its concern for the poor and the handicapped in a perfunctory, highly permissive, indeed self-contradictory way, but a major shift in policy had occurred. The 1968 and 1976 Educational Amendments would build powerfully on the tentative statements of social objectives in the 1963 Act. At the same time, all educational policy became subject to the Civil Rights Acts of 1964 (race) and 1972 (sex and handicapping condition). By the mid-sixties, moreover, President Johnson's celebrated "war on poverty" was moving into high gear, and vocational education necessarily became a part of that overall program. Even more recently, vocational education has been modified in some of our major cities by court-imposed desegregation orders.

During this period, the leadership of the vocational education community was called upon, if not to abandon one familiar ground of confrontation (the struggle to make the high school a place of practical training rather than an exclusive sanctuary for the academically elite), to add a new one (the struggle to assure good jobs for members of groups subject to school-based or employer-based discrimination, or both). It is plausible to suggest that vocational educators do not see the first battle as won; they often regard themselves as yet on the defensive against an academic plutocracy. It is further plausible to maintain that vocational educators believe "social legislation," which is how they sometimes describe the vocational acts from 1963 onward, undercut their main objective. The more vocational education is seen as the special refuge of downtrodden minorities, the less likely it is to compete effectively for State and local resources. State and local money is still the main source for support of education in the United States through the 14th year of schooling. Federal money, bearing the (almost) full burden of social

uplift, is often perceived as tainting those who have to use it. It is difficult not to sympathize with the vocational educator who wondered why it was only the vocational programs which were

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[7] Actually, the provision about construction of area vocational schools, which was accepted eagerly by many states, established a conflict toward other newly proposed uses of federal funds, such as taking care of disadvantaged or handicapped youth, because it served to direct states' attention to improvement of suburban programs, the almost universal siting for areas schools, rather than improvement of schools in central cities, in which a majority of disadvantaged youth reside.

to be held accountable for successful education of the most difficult-to-educate of the youth of this country. But Congress had even more arcane measures in mind.

Federal Initiatives: 1964 - 1976

After the 1963 Act, Federal vocational legislation was no longer self-enforcing. The Congress continued to impose increasingly stringent controls on the use of Federal funds. For example, the Educational Amendments of 1976 expanded the use of set-asides. Ten percent of the main Federal grant was reserved on a matching basis for handicapped students, 20 percent was reserved for disadvantaged students (there was a set-aside within this set-aside for bilingual persons), and 15 percent was reserved for postsecondary programs. With regard to manpower planning, the States were formally required to:

" assess the current and future needs for job skills within the State and, where appropriate, within the pertinent region of the country through consideration of the latest data of present and projected employment...set out explicitly the goals the State will seek to achieve by the end of the five year period of the State plan in meeting the needs for particular job skills...including a description of these goals in terms of ... the courses and other training opportunities to be offered to achieve those skills...the projected enrollments of those courses and other training opportunities among the various levels of education and among the various institutions of the State...the allocations of all local, State, and Federal financial resources available in the State among these courses and training opportunities." (Section 107 (b))

With respect to accountability, procedures were made more explicit in the 1976 legislation. In general, States were stated to be accountable for the uses to which they put State and local money in occupational training, as long as they accepted Federal vocational funds.[8] The criteria for program evaluation included the following:

> "...each State shall evaluate, by using data collected, wherever possible, by statistically valid sampling techniques, each...program within the State which purports to impart entry level job skills according to the extent to which program completers and leavers...find employment in occupations related to their training and...are considered by their employers to be well-trained and prepared for employment, except that in no case can pursuit of additional education or training by program completers or leavers be considered negatively in these evaluations."
> (Section 112 (b))

Yet, the very success in the pre-1963 years of vocational educators in attracting State and local money for their programs mitigated the strength of the congressional hand in the post-1963 period. Accountability provisions aside (they were not strictly enforced), if 90 percent of

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[8] This raised an interesting question regarding the state's responsibility toward students, especially students who are members of "target populations," who reside in the jurisdiction of local educational agencies that refuse federal funds and offer no vocational education.

vocational education spending was non-Federal in a given State, the natural response of State and local administrators was, in effect, to claim compliance with Federal intent whenever 10 percent of their enrollments were in programs that met the Federal Government's strictures. Where Federal rules regulated the flow of Federal dollars, the massive amount of overmatching allowed States to shift State and local dollars to cancel effectively the effects of Federal distributions.

The 1968 Amendments solidified and expanded the provisions of the 1963 Act. New features of this legislation included provisions for research and training, exemplary programs and projects, residential vocational education, cooperative education, and work study. By this time programs and program delivery structures had proliferated to the extent that duplication of effort among delivery systems (secondary schools, adult schools, community colleges) became an important issue in many States.

In 1974 a national General Accounting Office (GAO) study of vocational education identified a number of concerns with regard to services to disadvantaged and handicapped youngsters, program bias against women, lack of career counseling and lack of job placement. These negative findings had strong repercussions for the 1976 VEA reauthorization. Authority for 'program maintenance' which was the core of the 1963 Act, was now reduced to "maintain where necessary." States were required for the first time to provide 50 percent of the State level administrative costs for vocational education programs. This new requirement was devastating to State level vocational leadership in many States, because State dollars to continue the same level of administrative effort were not available.[9]

In the Educational Amendments of 1976, the Congress specified that there should be a "national assessment" of vocational education (NAVE), to be conducted in the final years of the Act's five year cycle by the National Institute of Education (now the Office of Educational Research and Improvement). The assessment was intended to discover the extent to which States and localities had complied with Federal intent in the implementation of the vocational education Act and to offer guidance toward re-authorization legislation. (These assessments, to be undertaken every five years, were also included in the subsequent acts). The national assessment conducted for the 1976 Education Amendments gave a generally gloomy picture of implementation of vocational technical legislation. The distribution formulas had failed to send the funds where intended, efforts to help disadvantaged students had served to segregate such persons into training for dead-end occupations, planning processes had been weak, funds intended for

[9] Throughout this history an important influence which is often overlooked but which deserves a fuller treatment than we can give here is that of the student organizations -- Future Farmers, Future Homemakers, Distributive Education Clubs of America, and Vocational Industrial Clubs of America. Not merely extracurricular activities, the very fabric of the programs was woven into projects which were the basis for local, state and national competitions. This is the arena in which some sense of state and national standards was most evident. Beyond the "performance" standard aspect of these activities was the intrinsic involvement of parents and the community which resulted in partnerships which would be the envy of most educational programs today. The diminishing state support, and unavailability of local teacher-advisors due to collapsed and evaporating vocational programs on high school campuses has steadily eroded this once powerful facet of vocational programs.

program improvement had been diverted to other uses, efforts to reduce sex stereotyping in training and employment had been aborted at the local level.

Most importantly, however, the assessment drew attention to three points. (1) The Federal legislation had been poorly drafted; its provisions were ambiguous and conflicting. (2) The Federal Government was "trying to do too much with too little;" -- given the modest size of Federal grants, the Federal Government's objectives were spread over far too vast a ground. (3) Disadvantaged populations were grossly underrepresented in the more demanding programs that offered good prospects for career employment.

The Carl D. Perkins Vocational Education Act

Congress responded to these findings and other political considerations by creating the Carl D. Perkins Vocational Education Act of 1984 (named after the late chair of the House subcommittee on vocational education). The general goals of the Perkins Act were as follows: (1) "...expand, improve, modernize, and develop quality vocational education programs in order to meet the needs of the Nation's existing and future work force for marketable skills and to improve productivity and promote economic growth..." and (2) "...assure that individuals who are inadequately served under vocational education programs are assured access to quality vocational education programs, especially individuals who are disadvantaged, handicapped, entering nontraditional occupations for their sex, adults in need of training or retraining, single parents or homemakers, individuals with limited proficiency in English, and individuals who are incarcerated.." (Section 101 (a))

The two goals were ambiguous, given the realities of American education. The first goal is directed toward raising the productivity of the work force. The quality of vocational education is only one variable affecting productivity, and probably not a very strong one at that. Nevertheless, the productivity goal would direct vocational educators' attention to expanding programs whose graduates could help employers overcome productivity bottlenecks. The second goal is strongly distributional. If members of target populations are to gain access to high quality vocational education, two things at least must be done. First, the disadvantaged or handicapped persons need to be provided with competence to meet the academic prerequisites of rigorous vocational programs. Second, the programs available to them in their neighborhoods, mainly inner city neighborhoods, need to be raised to a high standard of performance. With some notable exceptions, secondary schools and community colleges in inner cities, and the vocational programs they sponsor, did not meet these criteria. Hence, the productivity goal would point to one set of programs for expansion or improvement (or both) and the distributional objective would point to another set, with little apparent overlap between the two. The impact of this ambiguity is heightened by the fact that the authorizations of Federal expenditure under the Perkins Act represented less than one percent of total expenditure in public schools and colleges in the U. S. in 1985.

Ninety-three percent of Perkins funds were contained in a "basic grant" to the States. Fifty-seven percent of the basic grant consisted of set-asides, the largest at 22 percent (of 57 percent)

for disadvantaged persons and the smallest set-aside at one percent for incarcerated persons. The remaining 43 percent of the basic grant was for "program improvement." The set-aside funds tended to go predominantly to districts and colleges in which the proportions of households living in poverty were above national levels, though the GAO turned up some startling exceptions. The set-aside funds were used mainly to make assessments of the academic proficiencies of students and to provide remedial instruction. Little was done to channel members of target populations into superior vocational programs, nor to steer such persons away from programs that led graduates into dead-end occupations.

Summary

The primary unifying force for vocational technical education in the United States has been Federal legislation. Since Federal vocational dollars were the only education funds which flowed from the Federal Government to the States until the 1958 National Defense Education Act, Federal policy played a primary role in shaping current programs. The initial dollar-for-dollar matching requirements doubled the impact of the programs at the local level. The Federal requirement of a State board for vocational education had a powerful effect on State governance arrangements. Furthermore, the money was especially seductive to States because at one time 100 percent of State administration costs could be funded with the Federal money. Thus State education departments could increase their role, without an accompanying fiscal burden on the State coffers. The State plan requirement had to adhere to Federal standards, and it was extremely unlikely that a State would establish its own separate plan, funded solely with State monies, which was at cross purposes with the Federal plan. Even as the Federal policy moved increasingly from a strict job skills emphasis to a focus on serving the disadvantaged, most States were far too dependent on the Federal money to move to separate State-by-State plans, though the Federal dollars were less than 10 percent of the total revenues supporting vocational programs.

Federal vocational-technical education and training policy had other consequences. Its provisions led inexorably to vocational programs in high schools that were separate and distinct from other education programs on virtually every dimension of the school enterprise. Furthermore, because of the long history of significant vocational education funding by the Federal government, vocational education was seen by the Congress as the natural vehicle for improving the plight of urban and rural disadvantaged youth. Unfortunately, the intractable problems of urban education do not lend themselves to isolated, categorical funding solutions and instead are best addressed by much larger scale efforts which involve the entire school community and all of the school's resources. Vocational education, because of its separateness, was ill-equipped to be the focal point of a school-wide reform effort. The problems of secondary education for disadvantaged youth could not be solved by focusing vocational education dollars on schools with the highest incidence of disadvantaged youth. The adoption of that strategy led to unrealistic expectations about what even the best vocational educators could contribute.

III. Vocational-Technical Education in the 90's

Background

The 1980's have been characterized by education researchers and policy makers as the decade of reform. Not since the days of Sputnik in the 50's has the country been so fixated on the quality of education. At the start of the decade, States and local school districts had begun to make changes on their own, but it was the publication of *A Nation at Risk* in 1983 that energized, mobilized and gave national focus to the education reform movement in the United States. State efforts focused on the college preparation curriculum with special attention to strengthening graduation requirements, statewide testing and increasing teacher standards. At the local level, schools increased attendance standards, increased requirements for graduation beyond the State requirements, demanded more homework, and required longer school days and years. Unfortunately, there was little impact on student achievement. Tests in reading, writing and civics yielded no improvement. While scores in mathematics and science were up, the United States still lagged far behind most other developed countries.

More recently, new kinds of reports have appeared, focusing on occupational oriented education and particularly the skills required to improve the quality of the work force of the future. Such reports as *America's Choice: High Skills or Low Wages*; *Workplace Basics: The Skills Employers Want*; *Workforce 2000* and reports of the Secretary's Commission on Achieving Necessary Skills (the SCANS Commission) have shifted the debate away from a narrowly defined set of "academic abilities" toward a broader array of academic or general competencies, technical and job specific skills, interpersonal abilities, and behavioral traits, including motivation. Most of these reports were highly critical of existing vocational-technical programs, citing a variety of weaknesses including poor academic training, narrow vocationalism, obsolete equipment and ill-prepared teachers. The publication of these reports and the attendant attention given them has lifted vocational-technical education from relative obscurity to a place of prominence in the ongoing debate surrounding school reform.

At the same time, the Congress was receiving information from the National Assessment of Vocational Education (NAVE) and the U.S. General Accounting Office which were highly critical of the distribution of Federal funds under the Perkins Act. Both argued that the Federal dollars were not targeted to the poorest schools and districts, as the Congress had intended. Additional concerns focused on the splintering effects of the set-aside provisions and the fact that many of the grants were too small -- the NAVE reported that half the grants to secondary school districts were less than $7,900 per year -- to have any meaningful programmatic impact.

Emerging Vocationalism

In the late summer of 1990, Congress passed new legislation, the Carl D. Perkins Vocational

and Applied Technology Education Act (Perkins II), which represented the most significant policy shift in the history of Federal involvement in vocational-technical education funding. The preamble reads: "It is the purpose of this Act to make the United States more competitive in the world economy by developing more fully the academic and occupational skills of all segments of the population. This purpose will principally be achieved through concentrating resources on improving educational programs leading to academic and occupational skill competencies needed to work in a technologically advanced society." (Section 2) For the first time in Federal vocational legislation, emphasis was placed on academic as well as occupational skills. For the first time, the Act was directed toward "all segments of the population."

These new changes in policy were generated by several concerns. There is in the United States a strong, though not universally held, concern that its firms are losing their competitive edge in world markets. If this concern is justified, then multiple explanations are available, singly or in combination, to account for the economic decline. These include inadequacies in the various levels of management and banking policy, the competitive consequences of attempting to reduce environmental damage, rates of savings and investment that are too low, etc. There is a strong tendency, however, to place the blame on one factor: a labor force with analytical skills that are insufficiently developed for a high performance work environment. As one example, it has been contended that American workers are not adept enough in mathematics to apply statistical quality control on the production line. If we assume that the United States is in economic decline and that the cause can be found in the work force, we find three alternative actions: (1) continue to export the more demanding kinds of jobs to overseas suppliers; (2) import workers with the necessary skills, and (3) improve the cognitive skills of the U. S. worker. Only the third offers hope for the preservation of the United States as a high skill, high wage economy. A falling birth rate in families of middle and higher levels of education compounds this difficult task.

For the longer run, it thus becomes necessary, as a consequence of demographic change, to seek a quantitative leap in the school performance of lower-income students, i.e., students in inner cities and in pockets of rural poverty, where standards of educational attainment--up to now--have been abysmally low. It also becomes necessary to retrain large segments of the work force already in place. Vocational-technical education has historically been directed toward training workers entering the labor market than the retraining of adult workers.

In response to these concerns the Congress, in enacting Perkins II, set the stage for a three-pronged approach to better preparing a high skilled work force. Congress also eliminated the setasides for special populations so that the use of Federal funds would not be split into two separate and unrelated tracks--serving special populations and improving vocational education programs. Perkins II emphasizes:

(1) the integration of academic and vocational education,
(2) articulation between segments of education engaged in work force preparation -- epitomized by Congressional support for Tech Prep, and
(3) closer linkages between school and work.

The following sections will describe each of these important new initiatives in some detail.

Integration of Academic and Vocational Education

Perkins II requires that "funds made available...shall be used to provide vocational education in programs that...integrate academic and vocational education through coherent sequences of courses so that students achieve both academic and occupational competencies." (Section 235 (c) (1) (B)) The Act also demands that State plans describe how they will provide a vocational program that "integrates academic and vocational disciplines." This is an extraordinary departure from past Congressional practice, which allocated funds for "program improvement," but left to States and local school districts the determination of the appropriate strategies.

There were two interdependent reasons the Act called for integration of academic and vocational studies. First, the community of employers suggested to congressional education committees that their newly-hired workers were deficient in academic skills. This was by no means a point of strong consensus among employers. However, those who professed it represented "high performance workplaces," upon which the future competitiveness of the American economy is thought to rest. This argument alone might suggest that secondary vocational programs should be eliminated in American secondary schools and that the only concern should be in enhancing the academic skills of all students. But the second argument in favor of integration held that the majority of secondary students failed to acquire transferable academic skills because of the lack of appropriate pedagogical practice. The assumption was made, supported to a reasonable degree by findings from cognitive science, that the majority of students would better acquire those kinds of academic skills useful in the high performance workplace if pedagogical practice emphasized "contextual learning," i.e., relating theoretical concepts to the solution of practical problems. Hence, the policy position became one not of dropping vocational studies from the curriculum but of incorporating academic content into the programs of applied instruction and using applied instruction techniques to impart academic content.

Current Status of Integration of Academic and Vocational Education Programs

Although the Congressional charge to integrate is explicit, there is little agreement on what the concept entails. In fact, the most comprehensive examination of integration practices (Grubb, 1991) identifies eight models of integration, ranging from marginal alterations to existing programs to an entire restructuring of the secondary school curriculum. These secondary school models can be briefly summarized:

1. Increasing academic content in vocational courses.

2. Building cross-disciplinary teams of academic and vocational teachers to incorporate academic content and vocational education pedagogy.

3. Designing academic courses to be more relevant to vocational interests.

4. Altering both academic and vocational courses to provide closer alignment.

5. Initiating projects in the senior year of high school which incorporate both academic and occupational themes.

6. Creating schools within schools, emphasizing integration around vocational themes.

7. Establishing secondary schools and magnet schools in which an entire secondary school curriculum is build around an occupational theme.

8. Within comprehensive secondary schools, establishing occupational clusters which emphasize the integration of academic and vocational education.

The level of interest and activity across the country is high but most of the integration efforts at this early point in their development have adopted the least complicated approach -- the adoption of applied academics courses such as Applied Math, Applied Communications or Principles of Technology (physics). In addition, because the more sophisticated approaches may require several years to implement and because there is such variability among approaches, it is much too early to assess the effectiveness of the concept.

The level of activity in postsecondary institutions is much lower. By far the most popular is the use of degree requirements to broaden academic content and the applied academic courses, especially Applied Technology, Applied Math and Applied Communications. These rudimentary attempts at integration represent the fact that integration is perceived as a secondary school reform, at least so far, and therefore has not inspired equivalent enthusiasm at the postsecondary level.

At the secondary level, Grubb and Stasz (1991) have noted several important changes which occur with integration:

1. Integration of content between traditional academic and vocational courses, or in advanced efforts, aligning the curriculum (not just individual courses)

2. Increased collaboration between academic and vocational teachers, in the form of joint curriculum development, joint planning across separate courses, or team teaching

3. A shift away from teaching specific facts and procedures to teaching generic skills, including complex reasoning abilities and widely-useful attitudes and work habits.

4. Modification of teaching methods to draw on strengths of various modes of instruction. On the vocational side, this includes project-oriented methods, more student-initiated activities, group work, teaching of abstract or general principles in the context of specific applications, and an emphasis on tutoring or apprenticeship methods rather that lecturing. From the academic side, greater emphasis on writing, use of focused

discussion and the "whole language" principle of exploring several representations of a single idea.

5. Integration of vocational and academic students, primarily in magnet schools, in the Academy model, or schools with occupational/career focus.

6. Changes in organizational structure to facilitate other forms of integration, such as the Academy established as a school-within-a-school.

7. Improved career guidance and counseling functions.

All of these changes represent a major shift in the ways vocational-technical education has historically been provided in the United States. The provisions, initiated and promulgated by the Congress and accepted by vocational educators since the days of Smith-Hughes, tended to separate and isolate vocational-technical teachers, students and curriculum from the rest of the school community are suddenly and dramatically at issue because of the changes. One ought not assume that such a dramatic change will come easy. The historical separation of vocational and academic education is a powerful barrier to integration and the ultimate success of this new initiative will depend on the willingness of policy makers and practitioners at the Federal, State and local levels to stay the course.

Tech Prep

The second major thrust of Perkins II involved an emphasis on more closely linking secondary and postsecondary (community college) programs which prepare students for work. Interest in the development of articulated curricula between secondary and postsecondary institutions has been evident for more than 60 years. Recent interest, however, reflects the pursuit of a relatively new concept--the development of articulated vocational-technical education programs that provide preparation for technical careers, i.e. tech prep programs.

Tech prep is an emerging concept whose meaning changes as experience grows. Tech prep was broadly defined as "a carefully designed curriculum that engages a high school student in a four-year (two secondary plus two postsecondary) or six-year (four secondary + two postsecondary) plan to gain the competencies (knowledge, skills, and values) required for technical careers" (Hull and Parnell, 1991). Tech prep models include a common core of course work for all students in the first two years of high school leading to a student decision in the junior year to enroll either in a college prep or tech prep program. The barriers between the two programs are semipermeable, allowing students to change programs later (but not without some cost in time and effort). The tech prep option includes high school course work designed to prepare the student for advanced technical specialization in the community college leading to an associate degree (a two-year postsecondary degree). The high school portion of the program places a heavy emphasis on building a strong foundation (both academic and vocational), leaving much

of the advanced technical course work for the community colleges.[10]

Congress further refined the concept by defining in Perkins II, tech prep education as a "...combined secondary and postsecondary program which:

> (A) leads to a two-year associate degree or a two year certificate;
>
> (B) provides technical preparation in at least one field of engineering technology, applied science, mechanical, industrial, or practical art or trade, or agriculture, health, or business;
>
> (C) builds student competence in mathematics, science, and communications (including through applied academics) through a sequential course of study; and
>
> (D) leads to placement in employment." (Part E)

Consortia consisting of high schools and community colleges are eligible for funds for planning and implementing activities. In developing regulations for the implementation of tech prep, the United States Department of Education (consistent with the language of Perkins II) specified desirable components by awarding preference points to projects which:

> 1. provide for effective employment placement activities or transfer of students to four-year baccalaureate degree programs;
>
> 2. are developed in consultation with business, industry and labor unions; and
>
> 3. address effectively the issues of dropout prevention and re-entry and the needs of minority youth of limited English proficiency, youth with disabilities, and disadvantaged youth.

Although the Congress specifically limited funds to include only those activities conducted in the last two years of high school, many experienced community colleges and school districts have moved away from these restrictive grade designations and have expanded articulated programs into junior high and even elementary schools.

Tech prep marks a significant departure from past practice which was characterized by battles between community colleges and high schools over the appropriate division of Federal funds between the two segments. By adopting the tech prep provisions of Perkins II, the Congress opted for a strategy which emphasized the importance of

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[10] Some programs, after successful completion of the community college portion, add an articulated connection with four year technical baccalaureate programs.

closely aligning secondary and postsecondary programs which prepare students for productive work as technicians.

Articulation can benefit students, educational institutions, and the community at large. Frequently cited advantages to students include better preparation for skilled work, the elimination of duplicate course work, the opportunity to earn college credit while enrolled in high school, and a more efficient use of student time and money. For high schools, one of the major purported advantages is increased student retention. Colleges can, at least theoretically, expect a reduction in the number of remedial or basic courses. Some researchers argue that articulated programs are an effective means of confronting reduced funding for education by enhancing retention and reducing expenditures at the postsecondary level for remediation.

Educational reformers (e.g., Bottoms and Presson, 1989) report that "recent regional and national studies show that well-designed vocational courses can raise academic achievement levels significantly" (Hull and Parnell, 1991:381). Furthermore, Bottoms and Presson (1989) concluded that a planned program of vocational and academic study (sharing the goals of the advocates of integrating academic and vocational education) has the potential of providing a structured and purposeful high-school experience, raising academic and technical achievement expectations for students, motivating students to pursue more rigorous academic courses, and creating a team of vocational and academic teachers (Hull and Parnell, 1991:385-386). The concept of tech prep incorporates many other important research hypotheses. In summary form, these principles include:

- Integrating academic and vocational education. Strengthening academic preparation by emphasizing contextual learning will lead to improved learning (Grubb, 1991).

- Strengthening the connection between the world of work and the world of school. Reinforcing school work by providing experiences in the workplace which utilize concepts learned in school will lead to improved academic knowledge and work skills (Stern, 1990).

- Enhancing the connection between curricula in high schools and the community colleges has important advantages, most importantly, it makes it possible to increase the level of technical expertise of program completers (Dornsife, 1991; Hull, 1991).

- Emphasizing sequences of courses leading to a degree or a certificate. Students successfully completing sequences of courses and gaining a postsecondary degree and/or a certificate will possess greater technical skills, have greater flexibility to respond to future changes in the workplace and have better prospects for lifelong earnings. (Hoachlander, 1990), Grubb, 1990).

- Giving students more meaningful educational opportunities in high school which have the prospect of leading to meaningful, well-paying employment will reduce the

high school dropout rate (Parnell, Hull, 1991)

- Outcome oriented programs with specific competency based curriculum and with specific goals (job placement, or continuing education) lend themselves to the current emphasis on accountability (Hoachlander, 1990).

All of this suggests that the careful and thorough evaluation of tech prep programs, their development and implementation is important. Currently, the tech prep program is the program of choice of the Congress as evidenced by the appropriations which have gone from $60 million to $110 million in just three years. Community colleges and high schools throughout the country are showing unprecedented interest, largely due to Federal support. However, early information suggests that few consortia have adopted the full-blown tech prep model envisioned by the Congress. Since most Tech prep programs are in the planning stage or in the first year or two of implementation, it will be several years before a large enough number of tech prep program completers will be available for comparative research purposes.

Current Status of Tech Prep Programs

Prior to the coinage of "Tech Prep" the phrase "2 + 2" was used to connote high school/postsecondary articulated vocational education programs. They most frequently took one of two forms:

(1) time-shortened programs, in which the primary result of articulation is to shorten the time it takes to complete a specified curriculum, and

(2) advanced skills programs, in which the primary result is greater technical expertise.

Concurrent enrollment and advanced placement in community college courses are two frequently employed methods of reducing the time it takes to complete a given sequence of courses. The more sophisticated, and rarer, model of tech prep is a "skill-enhanced" model which provides that in an equivalent time period, as a result of the elimination of duplication of course work, a more advanced curriculum can be offered.

The term "articulation", as it has been applied to high school and community college coordination, has referred to the coordination of courses between institutions. An important distinguishing characteristic of new tech prep programs is that tech prep articulation refers to articulated curricula or sequences of courses. Results from recent investigations (Dornsife, 1991) indicate the implication of that distinction is lost on many school officials. Schools tend to apply the phrase "articulated curricula" to all articulation agreements whether they refer to individual courses or a sequence of courses. In addition, many schools and colleges refer to virtually any articulated vocational programs as "tech prep" as long as the curriculum is associated with vocational or technical programs areas (e.g., business, health occupation, engineering).

Consistent with other provisions of Perkins, the Congress explicitly directed Federally funded vocational education to be concentrated on programs which focus on the "at-risk" student populations. In spite of this clear directive, one-half of tech prep programs have no special activities designed for at-risk students. Finally, the majority of State agency policy statements on tech prep minimize issues of access and support services that are required in addressing the needs of special populations (Bragg, 1991).

On a more positive note, recent investigations (Hull and Parnell, 1991; Dornsife, 1991) indicate that programs operating for at least five years have advanced their scope and objectives beyond the articulation of existing courses that merely provide advanced placement. These expanded programs often include not only a curriculum development, but also a marketing, career guidance, and program improvement components. Most importantly, these programs have incorporated into their curriculum the articulation of completely new courses and course sequences in an entire program area, and the development of academic and vocational-technical core curricula for programs that provide training along a career path.

To date, no comprehensive evaluations have been conducted on tech prep programs. The surveys which have been done all predate the passage of Perkins II or have occurred only one year into its implementation and, as a consequence, suffer from a lack of common definitions and agreed upon components. These surveys focused almost exclusively on process variables. The United States Department of Education is mandated by statute to evaluate tech prep programs and that effort is now underway even though the development of sophisticated tech prep programs will take several more years.

Connecting School and Work

The third major message from Perkins II was to strengthen the transition from school to work. Two major issues now dominate discussions in the U. S. about work force quality and work force preparation. The first revolves around the question of how to make more appropriate connections between education and work. There appears to be general agreement that entry-level workers need higher levels of competence in academic subjects, especially mathematics, the sciences, and language and that a high percentage of secondary students currently are being prepared inadequately.

A large majority of American secondary students work for pay while they are attending school. Unfortunately, the kind of work they do is mainly routine, offering little opportunity to learn useful concepts or traits while on the job. One approach would be to deny students the opportunity to work, increase the time at school demanded of students, and raise standards for high school completion. In general, one might try to "force feed" academic subjects on students who have previously been unresponsive in meeting learning objectives.

A second approach suggests that in order to adequately prepare students for work some structured education will take place on the job. Hence, the better policy is to do the following

two things: (1) infuse more academic content in those practical subjects that are taught, or should be taught, in school -- integration of academic and vocational studies; and (2) infuse, likewise, the work experiences of youth with substantive learning. Models of both aspects of the second approach exist in the United States, but in very few programs.

The second main issue is one of social and economic mobility. The highly accessible set of postsecondary institutions in America might lead some to believe that the country has as much mobility as it needs. Yet, figures on school drop-outs, welfare dependency, and crime suggest otherwise. Short term training programs like the Job Training Partnership Act (JTPA) are intended to offer a second chance to what is essentially a large group of school failures. There is doubt, however, that JTPA and related programs can help people move up the career ladder very far at all.

The text of Perkins II emphasizes the importance of "...strong experience in an understanding of all aspects of the industry the students are preparing to enter, including planning, management, finances, technical, labor and community issues, and health, safety and environment issues." (Section 113 (a) (3) (B)) This approach appears to make at least three valuable contributions. First, it offers a thorough kind of education for entrepreneurship. Good knowledge of planning, management, finances, and underlying principles of technology, as well as knowledge of health and safety issues, seem to be crucial in the launching of new firms. Given the lack of job opportunities in many central city areas, job creation through the start up of new, locally owned businesses appear to be a key element of urban revival. Secondly, instruction in all aspects of the industry helps students understand the social significance of their future occupations and the contributions they, as future workers, will make to the welfare of the Nation. Thirdly, education in all aspects of the industry would allow American employers to benefit from responsible worker-initiated proposals for productivity gains.

This holistic approach is but one example of the renewed interest and emphasis on improving the connection between school and work. Youth-based apprenticeships, structured work experience, cooperative education, partnership academies and school based enterprises are all programs which emphasize closer connections between school and work.[11]

There are several advantages which would likely flow from such a marriage. Such a connection would help students establish a career identity and hopefully encourage them to see more purpose in their immediate schooling. Counselors are becoming increasingly rare in American schools and many counselors have little to say to students beyond describing entrance requirements of baccalaureate degree granting colleges. Urbanization and industrialization have made the nature of different kinds of work invisible to most young people. The education-work connection in a variety of ways should help reduce this student information deficit. Secondly, some teachers have their own information deficits, one of which is awareness of how much and

[11] For a full treatment of programs which emphasize the school to work connection see the U.S. Department of Education, Office of Vocational and Adult Education March 1991 Publication entitled, "Combining School and Work: Options in High Schools and Two-Year Colleges."

what kinds of math and science students need to be successful in a high performance workplace. The States do very little to encourage educators to keep up to date with regard to industrial skills standards. Given these conditions, teachers and students combine to accept expectations of student performance that have been inappropriately low.

A school connection with a respected employer would lend much needed social status to vocational education. Industrial connections increase opportunities for students to sense that they are receiving "just in time" education and training. When theory in today's class helps solve a problem in today's practical assignment, the learning effects can be powerful. Information flow is not strictly unidirectional. In some cases, for example, community colleges can provide technical assistance to small and medium sized firms in the area. Thus, the school/industrial connection moves beyond training to productivity enhancement and job creation (Rosenfield, 1992).

Congress has thus provided a template for the vocational-technical education portion of the emerging strategy for preparing the work force of the future. Its three core approaches mark a significant departure for past vocational-technical education acts by emphasizing not the separation and segregation of vocational-technical education but its integration -- with academic instruction, between secondary and postsecondary institutions and with business and labor. Two final components of the new Act, both marking serious departures from past practice, are the provisions related to funds distribution and accountability to which we will now turn.

Funds Distribution

Congress responded to three concerns perceived to exist under the prior legislation. First, the Congress was convinced, in spite of its clear direction, funds were not getting to the areas of greatest need (defined as numbers/percentages of handicapped and disadvantaged students). Congress, based on reports from the NAVE and the U.S. Office of Management and Budget, tended to hold State officials responsible for this perceived misallocation. Secondly, the large number of local grants, often exceptionally small, diluted any observable impact the Federal initiatives might have had. Finally, the Congress was persuaded that its historical proclivity to divide Federal funds into dozens of special categories and set-asides was creating a disjointed, uncoordinated impact, further complicating and reducing any noticeable impact the Federal dollars might play.

As a result of these concerns, the Congress bypassed State agency decision-makers by allocating the vast bulk of the moneys directly to local education agencies, thus removing virtually all distributional discretion from State officials. In addition the Act materially reduced the amount of dollars available to State agencies to support leadership and technical assistance activities. The Congress went further and required that local funds be allocated within districts to those schools with the highest incidence of low income and handicapped students. To assure that the program dollars were of sufficient size to have an impact the Congress established minimum grant levels ($15,000 for secondary and $50,000 for postsecondary). Finally, with some exceptions, the Perkins II removes many of the fiscal constraints found in the former Act,

including set-asides. A major fiscal constraint appears to have been removed when the regulations accompanying the new act permit Federal vocational education act dollars for the first time to be expended on non-vocational education instructors as long as those instructors are engaged in a program designed to effectively integrate academic and vocational education. One of the cardinal Federal vocational technical education principles, permeating the history of Federal intervention, that Federal vocational education dollars were to be spent solely on vocational education personnel was now abruptly reversed. The changes in policy regarding funds distribution were only part of the story. Equally significant were the new provisions regarding accountability.

Accountability

Perkins II is not the first effort on the part of the Federal Government to hold school districts and postsecondary education accountable for vocational education. The 1963 Act required States to adopt State plans and to conduct program evaluations. Even earlier the Federal Government encouraged using various labor market outcomes -- such as placement rates or employer satisfaction -- in evaluating the relative success or failure of vocational education programs. These earlier efforts concentrated on whether the process was in place or not. Evidence was used to determine compliance with Federal law and not with the utility of evaluation and planning as an integral part of program improvement. The new Act attempts to change all that by emphasizing a broader array of student outcomes. The focus is no longer on those outcomes that are related solely to the labor market (e.g. job placement) but expands to include student learning outcomes as a device to assess program effectiveness. Importantly, and consisting with the new emphasis on the integration of academic and vocational education, the scope is also enlarged to encompass measures of academic achievement.

The Act explicitly requires States to develop systems of performance measures and standards for secondary and postsecondary vocational education. These systems are to include at least two measures of performance. One must be a measure of student gains, including academic achievement. The second may be any one of the following four: 1) occupational competencies, 2) employment skills, 3) retention in school, or 4) placement in further education, the military or employment. It is important to note that these measures must include "appropriate adjustments and incentives for encouraging services to targeted groups or special populations." State and local agencies are given a great deal of flexibility in moving beyond these minimal requirements and to modify measures and standards to reflect local conditions.

What is most notable about the new provisions regarding performance measures and standards is their prominent role in the annual evaluation of vocational education programs. States and local districts and colleges ignore these provisions at their peril. Although the Congress has not taken the step of directly connecting performance to funding, it will be difficult for programs which perform poorly for extended periods of time to justify their continued existence. Programs that consistently perform below standards for three years must, in collaboration with the State, develop local program improvement plans. As Hoachlander (1992) notes "...the new

legislation adopts the basic features of a classical rational planning model -- identify and prioritize the kinds of outcomes sought, determine appropriate performance objectives, monitor outcomes and evaluate effectiveness, and modify systems as necessary to improve performance."

In addition, the new accountability model may serve to be the impetus for an extended discussion at Federal, State, and local levels about the purpose of vocational education and the appropriate roles for each of the governmental levels involved. Hill (1991) notes that effective performance information systems must be keyed to the needs of the local users, not to the needs of State and Federal level policy-makers. How this squares with the national proclivities to adopt National "world class" standards and National examinations is still to be resolved. Local program administrators have mixed emotions about the provisions of the new Act.

It is much too early to assess the impact of the new accountability requirements. Successful implementation will require a special and complicated set of conflicting pressures and inducements. First the accountability model will be utilized to the extent it is deemed relevant to the program improvement efforts of local program administrators. Secondly, the accountability system will be taken seriously by local and State officials to the extent there are consequences attached to program performance. The extent to which funds are discontinued for unsuccessful programs will be one long-term index of congressional seriousness. Concomitantly, Federal and State policy-makers will need to exert considerable patience to see much change in student outcomes. Educational program changes are not immediately reflected in student outcomes and it may be several years before the effectiveness of the new programs can be fairly judged. State and national policy-makers must balance these competing and seemingly contradictory pressures: on the one hand, to be serious about the consequences of poor performance; on the other, to allow sufficient time for the new program initiatives to become fully implemented.

Next Steps

Although Perkins II represents the most dramatic change in Federal vocational-technical education policy since the inception of Federal aid to secondary education, it still leaves the United States far from having the necessary characteristics of a coherent system to prepare the country's youth for future employment. Little about the Act changes the basic underlying structure of education in the United States. It remains the province of a highly decentralized, locally autonomous set of institutions. The Federal Government's policies, as impactful as they may be, cannot in the short run hope to overcome the decades of powerful segregating, separationist policies which ran counter to current policies. In addition, the current small level of Federal funding may not be enough of a lure to entice States to change long-standing, entrenched behaviors. Since many of the new initiatives require a high degree of participation beyond the traditional boundaries of vocational-technical education, the next round of Federal strategies must include incentives for others to become full partners in the reform effort outlined in Perkins II. It is unrealistic to assume that the rest of the high school enterprise will be moved very far if the initiative is seen solely as vocational-technical education reform. Incentives must be established to encourage the involvement of whole schools, not just the vocational education

instructors and staff. Adding provisions for integrating academic and vocational education to the Elementary and Secondary Education Act (which effects both vocational and nonvocational aspects of the school program) is one way of expanding the concept. Another is to add provisions to the Higher Education Act to entice schools of higher education to focus attention on preparing future teachers, both academic and vocational, to be able to provide instruction in an integrated mode. Allowing consortia which establish tech prep programs to expend funds for 9th and 10th graders, and even earlier, would be another helpful policy initiative. Tech prep programs which expect that students will spring fully prepared into tech prep programs in their junior year of high school, absent early counseling and academic preparation will disappoint. Federal policies which aid and abet the participation of business and industry in vocational-technical programs could easily be fostered. Many States now provide such incentives. It would be very straight forward for the Federal Government to do so. Moreover, United States business must assume greater responsibility for promulgating workplace practices which encourage and foster the development of a high skills work force. A national strategy for work force preparation will fail absent the recognition that the strategy must be as ambitious as the reform and must reach out to the audiences of other portions of secondary education, other segments of education and the business community.

One of the anomalies of Perkins II was the action of the Congress to reduce the amount of leadership and technical assistance money available to State Directors of Vocational Education. By reducing the amount of money available to States for leadership and technical assistance activities, the Congress may have unwittingly removed the best hope for providing the necessary assistance to local districts to enable them to implement many of these new policies. It is unrealistic to assume that local districts currently have enough resources to provide the necessary technical assistance to their staffs. It is equally unrealistic to assume that the United States Department of Education with its small and largely compliance-oriented staff is adequately equipped to provide such assistance. A national technical assistance strategy, employing coordinated National and State efforts for assisting local school districts in implementing these changes is a necessity.

While technical assistance is important, it is by no means sufficient to produce real change. One of the major concerns expressed by researchers as they viewed early implementation efforts in both integration (Stasz, 1992) and tech prep (Hayward, 1992) is the natural proclivity of schools to oversell the changes they have made. In too many cases schools simply rename what they have already been doing in order to capture the additional funding. Unfortunately, the absence of meaningful technical assistance enhances the probability that the resulting program implementation will be disappointing. To the extent that implemented programs are permitted by the Federal and State Governments to deviate from the goals of the specific reforms outlined in the Act, the outcomes of the programs will be discouraging to the Congress and to the schools themselves.

The prospects for success of these reforms increasingly will become evident when the accountability questions are asked. If the policy is similar to past policies in which the

accountability mechanisms could be ignored with little risk, the programs will not improve. If, on the other hand, the new accountability strategies are governed by devices which distinguish between programs doing a good job from those which do not, and real consequences (i.e. loss of funds for unsuccessful programs) result from their application, real improvement is a possibility).

Achieving sweeping reform in entities as large and complex as the United States secondary and postsecondary schools requires clear, sustained and significant leadership from all branches of the National Government as well as cooperation and leadership from State and local entities. A coordinated strategy involving the President of the United States, his Secretary of Education and the Assistant Secretary for the Office of Adult and Vocational Education will be critical to program success. Concomitant with national leadership is a commitment from Governors and State legislators to place preparation for work high on the public policy agenda in their States. Close cooperation and coordination between other Federal and State agencies, especially Departments of Labor and Commerce is also obligatory.

The United States is not, by any measure, in a position to declaim that it has adequately addressed the problems associated with the preparation of a highly skilled work force ready to compete internationally with its counterparts in Europe and Asia. But it can point with some pride and hope to the initiatives represented in Perkins II as a meaningful step in that direction.

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