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ABSTRACT

A study was initiated in 1986 to collect systematic national data on the content and processes surrounding the delivery of vocational-technical education programs that could be used to help assess and describe the dynamics of high school vocational classrooms. The national database generated contained information from schools, classrooms, school personnel, and students in 120 high schools and 893 related classrooms. The schools offered two or more federally funded vocational classrooms. Data were secured through questionnaires, interviews, schools documents, and classroom observations. The topics addressed were shaped by 13 major policy issues: access and equity; adult training; articulation (secondary-postsecondary); at-risk students; basic skills; career guidance; currentness of vocational curricula, equipment, and materials; economic development; institutional characteristics; Job Training Partnership Act/community-based organization/vocational education linkages; private sector-vocational education linkages; teacher education; and transferable and higher-order skills. The research questions themselves focused on instruction in vocational classrooms, variations in vocational classrooms and in programs across different types of institutions, and addressing the needs of at-risk students in vocational classrooms/programs. Fifty-six references are listed. (YLB)

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For further information contact:

Program Information Office
National Center for Research in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210-1090

Telephone: (614) 486-3655 or (800) 848-4815
Cable: CTVOCEDOSU/Columbus, Ohio
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Research and Development Series No. 269.

DYNAMICS OF SECONDARY PROGRAMS ASSISTED UNDER THE CARL D. PERKINS ACT

**James M. Weber
Nancy F. Puleo**

**The National Center for Research in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210-1090**

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Foreword

Efforts to improve schools and school programs, as called for in the flurry of recent studies and commissioned reports concerning the quality of American education, require a greater understanding of those institutions and what goes on within them. That understanding is also a critical ingredient in efforts to improve the quality and effectiveness of vocational education, two stipulations of the Carl D. Perkins Vocational Education Act.

This document describes preliminary results of the largest, most comprehensive study of vocational (and nonvocational) classrooms and programs undertaken in almost a decade. It contains summaries of selected survey data gleaned from a broad spectrum of schools, classrooms, school personnel, and students. The topics addressed using those data were shaped by the following 13 major policy issues: access and equity; adult training; articulation (secondary-postsecondary); at-risk students; basic skills; career guidance; currentness of vocational curricula, equipment, and materials; economic development; institutional characteristics; JTPA/CBO-vocational education linkages; private sector-vocational education linkages; teacher education, and transferable and higher-order skills

The resultant findings and discussion should be of interest and value to vocational education planners, policymakers, and researchers in that the study upon which they are based represents the first national view of secondary vocational education undertaken since enactment of the Perkins Act.

Ray D. Ryan
Executive Director
The National Center for Research
in Vocational Education
The Ohio State University

Purpose of This Study

For many students, high school represents the last opportunity to attain a formal education before entering the adult world. According to the Panel on Secondary Education for the Changing Workplace (1984), "The largest segment of the American work force consists of high school graduates who have not attended college, and the nation's economic well-being depends heavily on their performance" (p. x).

The available empirical evidence suggests, however, that in our society the school-to-work transition is difficult for many students (Education Commission of the States 1985). Our youth unemployment rate of approximately 17 percent, which is two to three times higher for minority youth (Bureau of Census 1984), is one of the highest such rates in the world, and suggests that, overall, we are not doing a good job helping our youth bridge one of the most critical gaps in their lives.

One of the factors contributing to the transitional problems of today's youth is their lack of adequate marketable skills, either academic or vocational. For example, the U.S. Department of Education note in their statement of priorities and concerns for FY 1986 that

about 2.3 million people a year are being added to the pool of functional illiterates—of which 1 million are high school drop-outs or functionally illiterate graduates. (p. 7)

Evidence gleaned from a number of the national reports on the status of American education (e.g., *Action for Excellence: A Comprehensive Plan to Improve Our Nation's Schools*, *Educating America for the 21st Century*, *A Nation at Risk*) suggests that students require assistance in developing key basic skills, in enhancing their understanding of self, and in accommodating a number of other needs (e.g., attitudes, work habits, and limited physical capabilities) that may hinder their capacity to benefit fully from the educational experiences designed to prepare them for entry into the world of work, as well as to adapt to changes in the workplace that will surely occur during their lives (Hall 1982; Finn 1986; Carnevale 1987).

Our youth unemployment rate is one of the highest in the world and suggests that we are not doing a good job helping our youth bridge one of the most critical gaps in their lives

That vocational-technical education has a role to play in helping youth in their transition from school to work is a prevailing opinion expressed by both public officials and private citizens.

That vocational-technical education has a role to play in helping youth in their transition from school-to-work is a prevailing opinion expressed by both public officials and private citizens. For example, in a recent survey of the public's attitude toward the nation's schools (Gallup 1984), 84 percent of the respondents felt that vocational courses (outranked only by English and mathematics) should be required for students who do not plan to go to college, and 37 percent felt that some vocational education should be required even for students who plan to attend college.

Despite the substantial public sentiment regarding the importance of vocational-technical education and the intensity of student participation in the vocational curriculum—well over 75 percent of the nation's high school students enroll in at least one vocational course during their high school careers (Campbell, Orth, and Seitz 1981; National Assessment of Vocational Education 1988)—limited data exist regarding the content and process factors that define vocational instruction. To date, no systematic database has existed that could serve as both a benchmark and framework for evaluating conflicting claims about vocational education's role and the potential for achieving the kinds of student-centered outcomes needed over the next decade, for describing the key factors that define what goes on in vocational classrooms or the context within which they function, or for serving as a baseline for evaluating the effects of different program improvement initiatives under the current federal vocational legislation.

In an effort to respond to the informational void noted above and to the emphases in the Perkins Act that focus on the improvement of vocational programming—particularly for diverse groups of at-risk youth—in 1986 the National Center for Research in Vocational Education initiated a nationwide study of high schools and related classrooms. The purpose of the study was to collect systematic national data on the content and processes surrounding the delivery of vocational-technical education programs that could be used to help assess and describe the dynamics of high school vocational classrooms. The three objectives used to operationalize and delineate that purpose were as follows:

- **INSTRUCTION IN VOCATIONAL CLASSROOMS:** to identify and describe various content and process characteristics that define instruction in vocational (and nonvocational) classrooms
- **VARIATIONS IN VOCATIONAL CLASSROOMS/PROGRAMS ACROSS DIFFERENT TYPES OF INSTITUTIONS:** to describe how differences in institutional characteristics affect instruction in vocational classrooms
- **ADDRESSING THE NEEDS OF AT RISK STUDENTS IN VOCATIONAL CLASSROOMS/PROGRAMS:** to describe how instruction in vocational classrooms relates to the learning needs of different at-risk students

Methodology

The national database generated during the study contains information gleaned from a broad spectrum of schools, classrooms, school personnel, and students in a total of 120 high school and 893 related classrooms. The 120 schools constitute an unbiased, nationwide sample of high schools that offered two or more federally funded vocational programs with systematic variations in such factors as school size, type, location, racial/ethnic mix of student body, economic status of the community, and geographic characteristics. The classrooms in each school represent each vocational service area offered in the school, plus two nonvocational classes offered either in the school or its affiliated feeders (where applicable). An overview of the sampled schools and classrooms is presented in table 1. Table 2 offers some additional information about characteristics of the sample.

During the course of the study, data were secured through questionnaires, interviews, school documents and classroom observations in the sampled schools. Each of the classrooms was observed on two different class periods during a 1-week period. These observational data were accumulated over class periods into a single observational protocol per classroom. To guard against the results being confounded by individual observer's idiosyncrasies, they were assigned to visit no state more than once, and they visited each type of school sampled.

The different groups of respondents for the study, as well as the types of data they provided, are summarized in table 3. When reviewing the table, it should be remembered that—

- data were collected from two subsamples of teachers in each school—(1) teachers whose classrooms were actually observed during the study and (2) a random sample of nonobserved teachers in each sampled school.
- data were collected from students in each of the observed classrooms via a small group interview process which typically involved five or six students.

TABLE 1
A Description of the Sample Classrooms/Schools

TYPE OF SCHOOL AND SETTING	TOTAL PER TYPE OF SCHOOL & SETTING	TYPES OF CLASSROOMS													
		(A) VOCATIONAL (n = 649)									(B) NONVOCATIONAL (n = 244)				
		Ag	B&O	H	HE	M	T&I	CH	IA	C	Eng	Math.	Sci.	Other	
Comprehensive/Urban	150	6	25	2	7	14	33	8	5	3	11	6	11	19	
Comprehensive/Suburban	141	4	27	3	6	10	30	15	4	6	6	6	8	16	
Comprehensive/Rural	180	17	30	4	11	9	32	14	8	5	10	6	10	24	
Vocational/Urban	55	0	6	5	4	3	18	1	0	0	4	3	4	7	
Vocational/Suburban	63	1	7	5	5	3	24	1	0	0	5	1	6	5	
Vocational/Rural	23	2	2	1	3	1	8	0	0	1	1	1	0	3	
Area Vocational/Urban	121	7	15	10	13	12	30	5	0	0	8	5	2	14	
Area Vocational/Suburban	44	3	4	4	3	2	15	0	0	0	2	1	2	8	
Area Vocational/Rural	116	8	16	8	5	8	34	6	0	2	9	4	4	12	
TOTAL PER TYPE OF CLASSROOM	893	48	132	42	57	62	224	50	17	17	56	33	47	108	
TOTAL PER SCHOOL TYPE	COMPREHENSIVE = 471			VOCATIONAL SPECIALTY = 141					AREA VOCATIONAL = 281						
TOTAL PER SETTING TYPE	URBAN = 326				SUBURBAN = 248					RURAL = 319					

KEY

AG – Agriculture
 B&O – Business and Office
 H – Health
 HE – Occupational Home Economics
 M – Marketing and Distributive Education
 T&I – Trade and Industry
 CH – Consumer and Homemaker Education

IA – Industrial Arts
 C – Career, Exploration/CCOP/Work Experience
 Eng – English and Language Arts
 Math – Mathematics
 Sci – Science
 Other – Other subjects (e.g., social studies)

TABLE 2
Other Characteristics of Sample

CHARACTERISTICS	Vocational Schools	Nonvocational Schools	All Schools
SIZE			
• Average Number of Students	16 1	23 1	947
• Average Number of Teachers	--	---	51 7
MINORITIES SERVED			
• Average Percentage of Black and Hispanic Students	25	23	---
(a) Percentage of Black Students	----	---	12 8
(b) Percentage of Hispanic Students	---	---	8 2
• Average Percentage of Female Students	47	43	----
• Average Percentage of Handicapped Students	7	3	---
• Average Percentage of Disadvantaged in Community	----	---	23

TABLE 3
Summary of the Respondents and Types of Data That Define the Database

Respondents (Data Sources)	Numbers Completed		
	Interviews	Questionnaires	Observations
• Principal	117	107	--
• Counselor	116	114	--
• Teachers (a) Observed	850	737	--
(b) Nonobserved	-	1514	
• Students (Observed classes only)	4839	--	--
• Classrooms*	-	---	893

NOTE The numbers shown do not include the sets of school related and class related reports and other documents that were reviewed and used as secondary data sources

*Of these classrooms, approximately 2/3 involved vocational courses and 1/3 involved nonvocational courses

- the numbers shown do not include the sets of school-related and class-related reports and other documents reviewed by the study's field-site personnel—in particular, the 764 class/course syllabi and other documents containing outcome data.

The actual database of over 3,400 variables that was generated is defined by three data files: school file (496 variables); teacher file (267 variables); classroom file (2682 variables). Once prepared, the data files were used to address 26 questions—a limited number of the total, potential set of research questions that could be explored. Those questions involved 13 major policy issues gleaned from a review of a number of the recent reform reports, the Carl D. Perkins Vocational Education Act, and other pertinent literature (e.g., *The Unfinished Agenda* [National Commission on Secondary Vocational Education 1984]). The 13 areas addressed were access and equity; adult training; articulation (secondary-postsecondary); at-risk students; basic skills; career guidance; currentness of vocational curricula, equipment, and materials; economic development; institutional characteristics; JTPA/CBO vocational education linkages; private sector-vocational education linkages; teacher education; and transferable skills. A summary of the correspondences among these 13 policy areas/issues and 26 research questions addressed is provided in the following section.

A more detailed description of the survey methodology as well as statistical summaries can be found in the full research report by Weber, et al. (1988).

Research Questions, Policy Areas, and Study Results

The focus of this national study, shaped by identification of the 13 educational policy areas, yielded 26 research questions around which survey instruments were designed. A number of general findings were obtained in relation to the set of 26 questions addressed as part of the nationwide survey of schools and classrooms. Many of those findings, organized under the three study objectives, are listed below.

Instruction in Vocational Classrooms

- Although vocational classrooms offer frequent and varied opportunities for reinforcing and enhancing students' basic skills, far too many of these opportunities are lost and more needs to be done if the intent of the Perkins Act in this critical area is to be realized.
- Generally, when basic skills are part of the instruction occurring in vocational classrooms, teachers use more "traditional" methods of instruction (i.e., approaches more like those used by nonvocational teachers) than they do when basic skills are not an explicit part of the ongoing instructional process/content.
- As in the case of basic skills, vocational classrooms appear to provide frequent and varied opportunities for strengthening students' higher-order skills, but teachers and students do not appear to capitalize fully on those opportunities.
- Although vocational classrooms appear to be a more fertile ground for fostering positive student work habits and employability skills than do academic classrooms, relatively little actual instructional time (2 percent of the time in vocational classrooms) is devoted expressly to their development. Furthermore, although counselors reported providing considerable career planning opportunities, that would generally appear to be the case only if career planning is treated as synonymous with planning to go to college.

INSTRUCTION IN VOCATIONAL CLASSROOMS

- Generally, it seems that the materials, equipment, and skills in vocational programs are fairly current and whereas they could be updated (particularly in some rapidly changing areas and in some locales), they are not as outmoded and unrelated to the state of the art in their related occupational areas or to their intended educational purpose as has been depicted in some sources (e.g., Goodlad [1984] and Boyer [1983]).
- It appears that nationwide, the use of competency-based strategies and procedures is quite prevalent in vocational programs (i.e., in 60 to 80 percent of those programs); however, the available data provided few insights into the quality of the competency-based approaches reportedly used or the extensiveness with which they have been implemented (either generally or in specific settings).
- Clearly the instructional materials and activities (i.e., the instructional processes) employed in vocational classrooms differ in some substantial and significant ways from those used in nonvocational classes and those processes differ considerably from the modal pattern observed in "A Study of Schooling" (Goodlad et al. 1979) conducted a decade ago.
- The relative emphasis placed on reinforcement and feedback is comparable in vocational and nonvocational classrooms.
- Basically the instructional materials and activities observed being used by degreed and nondegreed vocational teachers in their classrooms were the same.

Variations in Vocational Classrooms/Programs across Different Types of Institutions

- Overall, the observed results indicate that there are no major differences among vocational classrooms in comprehensive, area vocational, and vocational specialty schools in regard to the relative emphasis being placed on reinforcing and enhancing students' basic skills. Furthermore, those results reinforce the conclusion noted earlier, that regardless of the type of school in which the classes are offered, many of the available opportunities for enhancing/reinforcing students' basic skills are lost.

VARIATIONS IN VOCATIONAL CLASSROOMS/ PROGRAMS ACROSS DIFFERENT TYPES OF INSTITUTIONS

- It would appear that, with the exception of computer-based word processing, the skills being taught and equipment/tools available in vocational specialty and area vocational schools are more current than those available in comprehensive schools.
- The data show that the recent changes in high school graduation requirements have generally led to decreased enrollments in vocational courses, but that those decreases have not differentially occurred across comprehensive, area vocational, and vocational specialty schools.
- With regard to counseling services, the data suggest that students across the three types of schools studied spend similar amounts of time interacting with counselors and that the services available in all three types of schools appear not to differ significantly.
- The frequency with which linkages were reported between the three types of schools studied and various community-based organizations did not differ appreciably.
- Overall, it appears that the role of the comprehensive school is becoming more focused on "career exploration" goals (though perhaps not by design), whereas the role of area vocational and vocational specialty schools is becoming more focused on job-specific skill training.
- It appears that teachers in comprehensive, area vocational, and vocational specialty schools are receiving much the same types and amounts of inservice training.
- Generally, vocational teachers are more likely to be involved in communitywide economic development activities than nonvocational teachers and the vocational teachers in area vocational schools are either as involved or more involved in such activities than are their counterparts in comprehensive and vocational specialty schools.
- Although participation in postsecondary education is positively correlated with participation in the college preparatory curriculum (which is typically offered only in comprehensive schools), the data do not demonstrate that participation in secondary vocational education (regardless of the type of school one attends) represents an educational "dead end." Vocational teachers reported that between 17 and 23 percent of their students attend 2-year postsecondary schools and between 12 and 18 percent attend 4-year institutions.

- There appears to be a considerable amount of interaction and (formal) articulation occurring between secondary and postsecondary institutions—such linkages were reported in over 50 percent of the schools studied and did not differ significantly among the three types of schools considered.
- With regard to the involvement of business-industry and labor representatives, it would appear that such representatives are consistently consulted by vocational personnel regarding a fairly wide array of program-related issues and that they are more frequently involved in the vocational programs in area vocational and vocational specialty schools than in the programs of comprehensive schools.

ADDRESSING THE NEEDS OF DIFFERENT AT-RISK STUDENTS IN VOCATIONAL CLASSROOMS/PROGRAMS

Addressing the Needs of Different At-Risk Students in Vocational Classrooms/Programs

- Although personnel in about 55 percent of the schools studied report either having dropout prevention/recovery programs or having elements of such programs in place, the amounts of time reported by school personnel as being spent on this problem would appear to be inadequate and rather coincidental, particularly given the breadth and pervasiveness of the problem.
- Generally, it appears that teachers (both vocational and nonvocational) devote relatively little time to planning and actual development of instructional activities/materials intended specifically to address the unique needs of their at-risk students. This lack of emphasis is particularly obvious when reflected against the mandate in the Perkins Act that "special needs" initiatives should account for 57 percent of the funds spent.
- The data suggest that the instruction that occurs across classes that have high concentrations of at-risk students is very much like the instruction provided in other classes, whether they be other vocational or nonvocational classes.
- Overall, the level of involvement of secondary teachers and counselors in either the development or the review of IEPs for the handicapped students they serve is quite limited. In addition, it would appear that vocational teachers are less involved than nonvocational teachers.

- The available data suggest that teachers (both vocational and nonvocational) currently receive very limited training, either through formal college courses or inservice, in working with and addressing the unique needs of different at-risk learners.
- Overall, 40 to 50 percent of the sampled schools reported offering vocational courses or other special programs for adult learners, and it appears that such offerings are provided more often in area vocational and vocational specialty schools than in comprehensive schools.

Table 4 provides a cross reference of the study objectives, related research questions, and policy areas.

TABLE 4
Overview of 26 Research Questions and Policy Areas Addressed

OBJECTIVES	RELATED RESEARCH QUESTIONS	POLICY AREAS												
		Access and Equity	Adult Training	Articulation	At risk Students	Basic Skills	Career Guidance	Currentness of Curricula/Programs	Economic Development	Institutional Characteristics	JTPA/CBO-Voc Ed Linkages	Private Sector-Voc Ed Linkages	Teacher Education	Transferable Skills
INSTRUCTION IN VOCATIONAL CLASSROOMS to identify and describe various content and process characteristics that define instruction in vocational and nonvocational classrooms	1 To what extent do teachers enhance and reinforce basic skills in vocational classrooms?					•								
	2 What activities and materials are used in vocational classrooms to help reinforce and enhance students' basic skills?					•								
	3 Are problem solving and other cognitive skills being taught in vocational classrooms?													•
	4 How much emphasis is placed on fostering/improving vocational students' employability skills and work habits?						•							•
	5 Are the skills taught and materials/equipment used in vocational classrooms dated?							•						
	6 Are vocational curricula competency based?							•						
	7 Do vocational teachers use a variety of instructional methods and materials?							•						
	8 Are feedback, reinforcement, and praise used in vocational classrooms?							•						
	9 Do degreed vocational teachers use more of a variety of activities and materials than do non-degreed teachers?							•						
VARIATIONS IN VOCATIONAL CLASSROOMS/ PROGRAMS ACROSS DIFFERENT TYPES OF INSTITUTIONS to describe how differences in institutional characteristics affect instruction in vocational classrooms	10 Is the emphasis placed on basic skills reinforcement/enhancement different across types of schools?					•			•					
	11 Does the currentness of the vocational skills, materials, and equipment used differ across types of schools?							•		•				
	12 Are changes in graduation requirements related to vocational enrollments across different types of schools?	•								•				
	13 Do students in vocational classes in different types of schools have access to counselors and counseling services?						•							

TABLE 4—continued

OBJECTIVES	RELATED RESEARCH QUESTIONS	POLICY AREAS											
		Access and Equity	Adult Training	Articulation	At-risk Students	Basic Skills	Career Guidance	Currentness of Curricula/Programs	Economic Development	Institutional Characteristics	JTPA/CBO-Voc Ed Linkages	Private Sector-Voc Ed Linkages	Teacher Education
	14 Do linkages exist between different types of schools and various community based organizations?										•		
	15 Is instructional type related to vocational offerings?								•				
	16 Do the professional improvement opportunities afforded vocational teachers in various schools differ?								•			•	
	17 Are vocational school personnel involved in communitywide economic development activities?							•					
	18 Is the preparation of students for entry into postsecondary institutions emphasized differently in various types of schools?			•									
	19 Do articulation linkages between vocational programs differ across types of schools?			•									
	20 Do business/industry linkages with secondary vocational programs differ across types of schools?										•		
ADDRESSING THE NEEDS OF AT RISK STUDENTS IN VOCATIONAL CLASS ROOMS/PROGRAMS to describe how instruction in vocational classrooms relates to the learning needs of various at risk students	21 How do different types of schools identify, track, and address the needs of dropouts?				•					•			
	22 Do vocational teachers devote time to the preparation of activities and materials to meet the needs of at risk students?				•								
	23 Do the instructional materials and procedures used in classes with many at-risk students differ from those used in classes with fewer at risk students?				•					•			
	24 Are IEPs developed for handicapped students in vocational programs and communicated to appropriate staff?				•								
	25 How much training have vocational teachers received to prepare them to serve LEP, handicapped, and other at risk students?				•								•
	26 Are secondary vocational education programs and facilities being used to meet the needs of adults, including inmates?	•											

Instruction in Vocational Classrooms

This section provides a discussion of findings related to research questions 1-9 from table 4.

1. To what extent do teachers enhance and reinforce basic skills in vocational classrooms?

The current press for strengthening the basic skills components of vocational programs can be traced in part to broad, relatively rapid changes in the nation's economy and in the attendant skills needed by workers in that economy, which occurred in the early 1980s. Those changes underscored the need for assessing the effectiveness of public education. This, in turn, led to the publication of numerous investigative and prescriptive reports on what was right and what was wrong with education in the United States that helped usher in a new educational reform movement referred to as the "excellence movement" (Bennett 1986).

The reform debate and the changes noted above have heightened awareness of the need for increased mastery of, as well as increased levels of, skill attainment by all vocational students in such areas as math, science, and communications (reading, writing, speaking, and listening). According to Berryman (1985) in the article "Magnet Schools Represent 'Serious' Attempt at Voc Ed Reform," employers still want students with vocational skills, but they want students with the basics of math and English as well. Furthermore, the results of a number of studies show that these basic cognitive skills and abilities are directly related to job performance (Hunter and Hunter 1982; Mikulecky and Ehlinger 1986; Henry and Raymond 1982).

A number of items were included in the survey instruments that dealt with this issue. Generally, the data secured via these items and the related observation results, along with perceptions obtained from the field observers, confirm that basic skills are an inherent part of most vocational skills, and hence, one can expect to observe such skills as part of vocationally related instructional programs. At the same time, however, they suggest that vocational teachers could do more to take advantage of these naturally occurring opportunities to reinforce and enhance their students' basic skills. Not only

The press for strengthening the basic skills components of vocational programs can be traced to broad, relatively rapid changes in the economy and in the attendant skills needed by workers in that economy

are opportunities to strengthen such skills often lost, but in many cases the related observer perceptions suggest that vocational teachers seem to be unaware of the basic skills in question when they are encountered during the instructional process (e.g., they assume students know how to perform the skills or they simply give them the answer, since "teaching basic skills is not [their] job.") Few explicit attempts are made (1) to resolve students' problems before continuing the lesson or (2) to facilitate transfer of the basic skills learned across vocational and nonvocational classes. These shortcomings appear to exist across all basic skills areas, but are particularly evident in the areas of reading and writing.

2. What activities and materials are used in vocational classrooms to help reinforce and enhance students' basic skills?

Several elements often used to operationally define differences among instructional methods (Joyce and Weil 1980; Medley, Coker, and Soar 1984) are—

- the organization of the classroom or learning environment during instruction (e.g., who is the "leader" of instruction, how are students grouped/arrayed during the teaching-learning process, and what types of interactions occur as part of that process);
- the types of activities used to "deliver" instruction; and
- the kinds of instructional materials that are used to facilitate learning.

As indicated by these elements, different methods of instruction generally vary in terms of WHO is doing WHAT to WHOM, HOW?

When basic skills are observed in vocational classes, it is likely that the teacher is an active participant, traditional types of materials are being used, and a larger group of students is being directly impacted

The current results suggest that when basic skills are observed as part of the teaching-learning process in vocational classes, it is more likely that the teacher is an active participant in the process (e.g., via lectures, discussions, demonstrations, and the assignment of specific reading and/or writing tasks), that one or more of the traditional types of instructional materials (e.g., texts, worksheets, chalkboard) are being used, and that a slightly larger group of students is being directly impacted as part of that process. It also appears that when basic skills are not observed as part of the teaching-learning process the participating students are somewhat more likely to be working individually with some type of machine/tool and practicing some skill or task.

Although, these findings reaffirm the pervasiveness of basic skills as part of most vocational tasks/activities, they provide no clear cut indications of specific instructional techniques that could be assumed to be more successful than others. In addition, they tend to support the need for vocational

education teachers to identify the basic skills inherent in occupational tasks and to make basic skills a more explicit part of instruction in their classrooms. For example, many students need help or skills to "unlearn" and replace inappropriate/incorrect procedures or skills, whereas others need help transferring what they have learned previously to the context defined by the task or problem with which they are now confronted. The strategies used to foster such skills development or transfer need to be part of the immediate, overall pedagogical repertoire of vocational teachers who should be prepared to routinely communicate and work with specialists to resolve the basic skills problems of their students

3. Are problem-solving and other cognitive skills being taught in vocational classrooms?

Increasingly, the ability to think and learn in the context of the workplace is considered to be one of the basic assets of successful employees (Brandt 1983; Panel on Secondary School Education for the Changing Workplace 1984). Furthermore, such skills are seen as part of the "new basics" needed by all students (National Science Foundation 1983).

The results obtained from the current study indicate that students in vocational classes are frequently provided more opportunities than students in general education classes to practice and use different higher-level cognitive skills (e.g., application, synthesis, and problem-solving skills). Such results are in keeping with the position described by Mikulecky (1984)—that most jobs call for literacy and computation skills that involve the use of higher-level application and metacognitive processes (e. g., setting purposes, self-questioning, summarizing, and monitoring), which differ from the processes emphasized in traditional (general education) classrooms.

As in the case of basic skills, however, the availability of opportunities to improve students' higher-order cognitive skills does not necessarily mean that vocational teachers and students routinely capitalize on those opportunities. The project data do not contain specific outcomes dealing with students' ability to utilize and/or transfer such higher-order skills. However, from an observer's perspective there appeared to be relatively little explicit effort on the part of vocational teachers directed toward enhancing such skills—a shortcoming that needs to be reversed if secondary vocational programs are to prepare students effectively to meet future demands of the workplace.

Students in vocational classes are provided more opportunities than students in general education classes to practice and use different higher-level cognitive skills

Employability skills are currently receiving little explicit attention from teachers in vocational classes

4. How much emphasis is placed on fostering/improving vocational students' employability skills and work habits?

The issue of employability skills inspires considerable debate. Goodlad (1984) questions the effect of schools as they currently exist on the preparation of youth for "the real world of work" (p. 343). Goodlad is not talking about technical job skills but, rather, about attitudes toward productivity and accountability.

The National Commission on Secondary Vocational Education (1984) shares Goodlad's concerns regarding the acquisition of employability skills. "Vocational education," states the Commission in *The Unfinished Agenda*, "should be concerned with the development of the individual in five areas" (p. 3), one of which is employability. It is important that secondary schools fulfill their role in teaching good work habits because they "are likely to become more, not less, critical in the foreseeable future" (Fitzgerald 1985, p. 26).

Given the importance of employability skills development and absence of a nationwide "picture" of the relative emphasis being placed on such skills, a number of items were included in the project instruments that would yield information related to this issue. The results obtained through these items suggest that employability skills are currently receiving little explicit attention from teachers as measured by the amount of instructional time devoted to their development—only 2 percent of the time in vocational classes. Although the importance of such skills is strongly emphasized in the literature, there does not appear to be a corresponding emphasis in the classroom.

5. Are the skills taught and materials/equipment used in vocational classrooms dated?

A criticism seen in recent education reform reports is that vocational education's claim to effectiveness is not supported by the antiquated equipment and outdated skills instruction observed in many high school classes (Goodlad 1984, p. 149; Boyer 1983, p. 123). Although negative reports of the datedness of equipment and skills training have been highly publicized, such reports may be inappropriate and misleading for two reasons: (1) much of the criticism builds upon impressions of a limited array of vocational programs in a limited number of schools, and (2) the criticism is frequently offered and/or interpreted without reference to vocational education's program purpose and accountability issues.

In general the study results suggest that the materials, equipment, and skills taught in vocational programs appear to be fairly current, and although they could be updated, they are generally not outmoded nor completely unrelated to the state of the art in their related occupations.

Materials, equipment, and skills taught in vocational programs are generally not outmoded to their related occupation

The information collected regarding the integration of computers into vocational programs and vocational teachers' efforts to keep current in their respective fields suggests that datedness is a continuing concern in the field. In addition, it appears that vocational teachers spend no less time than do nonvocational teachers in keeping abreast of developments in their subject areas.

Given the results of this study, it does not appear reasonable to claim either that (1) vocational education instructional strategies and resources are outmoded or that (2) they do not contribute to the desired education/training outcomes.

6. Are vocational curricula competency based?

For the past several decades, educators have been working to develop strategies within the classroom setting to better provide for student's individual needs. Two of the most promising approaches to emerge are the teaching-learning strategy referred to as mastery learning and competency-based education.

Competency-based education is an outgrowth of the "systems approach" described by Gagne (1977). Under this approach, systematic instructional design takes into account the student, the learning environment, the content, the technology, learning theory, and instruction.

Competency-based strategies are in use in 60 to 80 percent of vocational programs

In order to develop a national view of the extent to which secondary vocational curricula are competency-based, course syllabi were reviewed and several related items were included in the project instruments. Generally, the results obtained through these sources indicate that competency-based strategies and procedures are in use in 60 to 80 percent of vocational programs. At the same time, however, it was difficult to gain from the available data any insights into the quality of the competency-based approaches used or into the extensiveness with which they have been implemented. For example, a number of the syllabi reviewed for different vocational programs included competency listings cast in the form of progress charts, but little more. In other instances, the correspondences between competency listings and specific program-related materials/ activities were not made explicit. Some teachers had to search "long and hard" even to find their course syllabi, which clearly suggested that they were used infrequently during the day-to-day instructional process.

7. Do vocational teachers use a variety of instructional methods and materials?

According to Goodlad (1984) and Goodlad, Sirotnik, and Overman (1979), efforts to improve schools and school practices, including instructional methods and materials (a mandate of the Perkins Act), require knowing what is happening in and around those institutions. In keeping with this general perspective, Goodlad and his associates collected a variety of instruction-related data as part of "A Study of Schooling" (Goodlad, Sirotnik, and Overman 1979).

Goodlad and his associates reported finding little variety in the teaching practices used across their sample of 525 classrooms. Generally, they painted a modal classroom picture characterized by "a lot of teacher talk and a lot of student listening, unless students are responding to teachers' questions or working on written assignments; almost invariably closed and factual questions; little corrective feedback and no guidance; and predominantly total class instructional configurations around traditional activities—all in a virtually affectless environment" (Sirotnik 1983, p. 29).

The data collected in this study indicate that the instructional materials and activities used in vocational classrooms differ in some substantial and significant ways from those used in nonvocational classrooms. Furthermore, the materials and activities differ considerably from the modal pattern observed in "A Study of Schooling" (Goodlad, Sirotnik, and Overman 1979), which was replicated, at least in part, by the nonvocational classes studied in the current survey.

Although the current results show that the instructional "processes" used in vocational classrooms differ from those used in nonvocational classrooms, they do not signal that one approach is necessarily better or worse than the other. They do, however, tend to reinforce the perspective that the instructional "process" in vocational classrooms is not as sterile as the modal pattern described by Goodlad and his associates and appears to represent a viable alternative to that pattern, which may benefit some students who have a difficult time succeeding in the more traditional learning environment.

8. Are feedback, reinforcement, and praise used in vocational classrooms?

Regardless of the type of learning objective or the size of the class, learning is presumed to be enhanced when it is offered in the context of instructional events that coincide with the steps in mental processing (Gagne and Briggs 1979). One instructional event, "providing feedback about performance correctness," has received increasing emphasis in reviews of pedagogical approaches that stress clear instructions, support for and feedback for

The instructional process in vocational classrooms may benefit some students who have a difficult time succeeding in the more traditional learning environment

the learner; clear expectations; praise for good performance; and pointing out errors or faulty approaches as quickly as possible (Goodlad 1984, p. 104). Goodlad (ibid.) observed that feedback does seem to occur more often in vocational education—as well as in the arts, physical education and foreign language—and that may be one reason why students express a preference for those subjects (p. 119).

Given the contributory role of positive reinforcement and immediate feedback to enhanced performance, several items were included in the survey instruments that dealt with this issue. Generally, the related results indicate that the relative emphasis placed on reinforcement and feedback is about the same in vocational and nonvocational classrooms—neither group of teachers has a “lock” on this particular aspect of good instructional practice. Also, the relative frequency with which feedback occurred was somewhat greater than that noted by Goodlad and his associates during “A Study of Schooling.”

The results of two items on which the vocational teachers differed from the nonvocational teachers could have been due in part to the fact that in vocational classes significantly more students are working either in small groups or individually, which means that when teachers are interacting with students (e.g., providing feedback) they are more likely to be doing so on an individual basis.

9. Do degreed vocational teachers use more of a variety of activities and materials than do nondegreed teachers?

Although relatively little systematic evidence is available regarding the education levels of vocational teachers, even less is known about the pedagogical skills they bring to the classroom. On the one hand, we know that vocational teachers feel prepared to teach in their specialties, that students enjoy participating in these classes (Goodlad 1984, pp. 184-185), and that as a group they use somewhat different instructional methods than do nonvocational teachers. What we don't know, is the quality of instructional techniques used or the degree to which these pedagogical skills are attributable to teachers' degree levels or are inherent in the unique aspects of the vocational education curriculum.

Because the purpose of this study is to provide descriptive rather than evaluative data, the decision was made to examine whether the instructional approaches used by degreed and nondegreed vocational teachers differ in any systematic ways. Basically the results obtained suggest that the instructional materials and activities used by degreed and nondegreed vocational teachers in their classes are similar. One potential explanation for why so few differences were found may be that in many states nondegreed teachers, like

Survey results indicate that emphasis placed on reinforcement and feedback is about the same in vocational and nonvocational classrooms

The instructional materials and activities used by degreed and nondegreed vocational teachers in their classes are similar.

degreed teachers. must complete a course sequence on teaching practices. The actual numbers of instructional hours the nondegreed teachers receive related to classroom practices may be the same or even greater than the numbers of instructional hours provided in most vocational education pre-service degree programs. Another possible explanation for so few differences being found may be because we looked only at the mechanical/overt characteristics of the instructional materials and activities used. The "real differences" may be in the quality dimension or in other conditions found in vocational classrooms such as teacher/student ratios, teacher autonomy, and unique aspects of the curriculum.

Variations in Vocational Classrooms/Programs Across Different Types of Institutions

The results in this section address questions 10-20 as listed in table 4. Each question involves a comparative analysis of variations in instructional activities and materials observed across the three types of high schools studied—comprehensive, area vocational, and vocational speciality high schools.

10. Is the emphasis placed on basic skills reinforcement/enhancement different across types of schools?

One of the factors influencing vocational classrooms that is identified as a target for applied research and development in the Perkins Act is "institutional characteristics." (U.S. Congress 1984, p. 37). Institutional characteristics are further addressed as part of the program improvement initiatives to be undertaken. The act states that appropriate funds may be used for "the expansion and improvement of programs at area vocational education schools;" "the acquisition of equipment and renovation of facilities necessary to improve or expand vocational programs;" and "the construction of area vocational education school facilities in areas having demonstrated need for such facilities" (ibid., pp. 23-24).

For the purposes of the current survey, "instructional characteristics" were defined in terms of alternative vocational education delivery systems. At present, the United States has three generic types of delivery systems in place that offer secondary vocational education programs: comprehensive high schools, area vocational schools (or centers), and vocational (specialty) high schools.

Given the relatively small amount of attention paid to the area of "institutional characteristics" in the research literature as well as the discrepancies found among the results of the studies that have been conducted, it is unlikely that unequivocal conclusions can be drawn regarding the superiority of one type of delivery system over another. In the current study, an effort is made to determine if the delivery systems are systematically related to differences in the methods of instruction and related activities observed in use

Overall, there are no major differences among the three types of schools in terms of the relative emphasis placed on the reinforcement and enhancement of students' basic skills.

within each such system or institution. The initial question considered focuses upon the relationship between institutional characteristics and students' basic skills.

Overall, the results indicate that there are no major differences among the three types of schools in terms of the relative emphasis placed on the reinforcement and enhancement of students' basic skills. Although the teachers in comprehensive schools report spending somewhat more time on basic skills-related activities than do the teachers in area vocational and vocational specialty schools, these self-reported differences were not borne out by the observational data or the data describing actual practices (e.g., numbers of writing assignments made per month).

11. Does the currentness of the vocational skills, materials, and equipment used differ across types of schools?

In several recent publications (Boyer 1983, Goodlad 1984), it is suggested that the skills, materials, and equipment used in vocational classes found in comprehensive schools are generally dated. Although all schools have difficulty keeping pace with equipment and technological changes, Weisberg (1983) contends that the problem is particularly severe for the comprehensive high school. This position is supported by Evans (1982) and Benson and Hoachlander (1982). Campbell, et al. (1987) also note that specialized vocational schools tend to respond quicker and more appropriately to labor market demands and to establish closer contacts with industry than do comprehensive high schools.

The current study results tend to support the general conclusion reached in previous research—that the skills being taught and equipment/tools available in vocational specialty and area vocational schools are more current than those available in comprehensive schools. The only exception found to this general trend was the tendency for computer-based word processing to be more prevalent in comprehensive schools. This finding may have been due, at least in part, to the fact that a very substantial proportion of the relatively limited number of vocational offerings in comprehensive schools are business and office classes in which such skills are frequently taught not only to vocational but to general and academic students as well.

That the skills taught and equipment available in comprehensive schools are more dated than those found in area vocational and vocational specialty schools could also be related to the vocational course objectives typically found in these different types of schools. For example, most of the programs in comprehensive high schools—for example, industrial arts, consumer and homemaker education, marketing and distributive education—are what

Skills taught and equipment/tools available in vocational specialty and area vocational schools are more current than those available in comprehensive schools

Hoachlander (1986) describes as "not occupationally specific," which means they are not oriented toward preparing students for a specific occupation or occupational area, nor do they include training for jobs that are at the "cutting edge" of technology in their respective fields. Some of the courses within these programs have as their primary objectives the fostering of basic skills (e.g., business math), whereas others are intended to foster students' career exploration. If these types of outcomes reflect the primary objectives of most of the vocational training provided in comprehensive high schools, whereas job-specific skill training represents the major goal of the training offered in area vocational and vocational specialty schools, then it does not necessarily follow that the tools and equipment found in comprehensive school vocational classes need to be the latest available.

12. Are changes in graduation requirements related to vocational enrollments across different types of schools?

One of the net effects of the current "excellence" movement (Bennett 1986) has been to reduce significantly the time available to all students for electives, including vocational courses, due to mandated increases in high school graduation requirements. Studies by the Education Commission of the States (1983), Dyrenfurth (1985), and Smith and Hester (1985) show that currently all states have increased their graduation requirements in response to the press for increased "excellence," but in general they have not altered the length of the school day or school year.

Graduation requirements have not differentially affected vocational enrollments

Given that the shrinking of elective time has been shown to be related to reduced vocational enrollments, the decision was made in this study to investigate the relationship between school type, changes in graduation requirements, and vocational enrollments, by including several items in the study's instruments that addressed this issue.

The results obtained suggest that reported changes in graduation requirements (as perceived by both principals and counselors) have not differentially affected vocational enrollments across the three different types of schools studied. Although these results clearly show that the changes that have occurred have generally led to decreased vocational enrollments, they do not show that those decreases are significantly larger or smaller for different types of schools.

13. Do students in vocational classes in different types of schools have access to counselors and counseling services?

Career guidance and counseling is treated as an integral and pervasive component of vocational education in the Carl D. Perkins Vocational Education Act of 1984. Historically, however, relatively little research has been

conducted regarding the relationship between the availability of career guidance/ counseling services and delivery systems. Although the work of Benson (1982) suggests that guidance counselors in comprehensive high schools tend to have an adverse effect upon contacts between vocational students and employers, the data upon which that limited conclusion is based are largely anecdotal and obtained from a restricted sample of high schools.

Job placement services are more likely to be available to students in vocational specialty schools.

A variety of items were included in the current survey that dealt with the availability and kinds of guidance services provided in different types of secondary schools. In general, the results obtained through those items are mixed. First, they indicate that students (both vocational and nonvocational) across the three types of schools spend similar amounts of time interacting with their counselors. Second, they indicate that there are generally more guidance personnel (as well as more students) housed in comprehensive schools than in the other two types of schools. Third, they suggest that job placement services are more likely to be available to students in vocational specialty schools than in the comprehensive or area vocational schools. Finally, they indicate that teachers in area vocational and vocational specialty schools are generally involved more with their schools' guidance/counseling personnel than are the teachers in comprehensive schools.

Such diverse results do not lend unequivocal support to the position that the availability of counseling support and related services in any of the three types of schools are poorer or better than those provided in the other two types of schools. Furthermore, they suggest that more intensive research is needed into this issue—research examines the quality dimension as well as operational characteristics of the counseling/guidance programs considered.

14. Do linkages exist between different types of schools and various community-based organizations?

Linkages between these different types of schools and community-based organizations do not differ appreciably

Sprinkled throughout the Perkins Act are statements and requirements that are intended to extend and strengthen linkages between the formal vocational education delivery system and different community-based organizations. Typically those statements/requirements are associated with improved delivery of services to different special populations to be served under the act. Despite this legislated impetus, which historically began before enactment of the Perkins Act, "productive partnerships between community groups and school systems have tended to be the exception rather than the rule" (Bailes 1987, p. 2).

Given the general sparsity of productive relationships between CBOs and the public vocational education delivery system, it is not surprising that relatively little research has been conducted regarding such linkages. In order to address the current lack of data regarding CBO-school type relationships,

several items were included in the survey instruments that dealt with this concern.

The data secured indicate that the linkages between the three types of schools studied and various community-based organizations do not differ appreciably. At the same time, they show that whereas about half the sampled schools reported having some type of linkage(s) with CBOs, the influence of CBOs upon the content and delivery of teacher inservice activities provided by the sampled schools is relatively small. Counseling personnel in the three types of schools report that they occasionally work with the CBOs in their areas.

Although it is clear that many schools and CBOs engage in linkage activities, given the absence of an adequate baseline, it is not possible to gauge the adequacy of their involvement; nor is it possible from the available data to describe the specific nature of the linkage activities.

15. Are institutional type, size, and location related to vocational program offerings?

The general perception based upon the limited research available is that institutional type, size, and location are each related to both the numbers and types of vocational programs offered in different secondary schools. Furthermore, that research suggests that comprehensive schools would rate lower on both variables than area vocational and vocational specialty schools. The purpose of the analyses conducted relative to this question is to update (and in some instances, perhaps replicate) those earlier results via a more contemporary database as well as to explicate further those relationships.

The results reflect patterns one might expect to observe. For example, agriculture programs are found most frequently in rural schools; health and occupational home economics programs are found more often in area vocational and vocational specialty schools than in comprehensive schools; and industrial arts and consumer/homemaker education programs are found almost exclusively in comprehensive high schools.

The findings regarding school type and kinds/numbers of vocational program offerings indicate quite clearly that in comprehensive schools the fewer programs offered are spread across more service areas. If one views vocational education's primary goal as job-specific training, then it appears that comprehensive schools are somewhat inadequate in terms of the "depth" of their vocational offerings. If, however, one views "career exploration" (Hoachlander 1986) as a major goal of vocational education, then the comprehensive schools seem to provide a wider array of such exploratory

If one views vocational education's primary goal as job-specific training, then comprehensive schools are somewhat inadequate in terms of the "depth" of their vocational offerings.

opportunities for students to choose from than do area vocational and vocational specialty schools.

Overall, the role of the comprehensive school in our society is becoming more focused on "career exploration" goals, whereas the role of the other two types of schools increasingly is to deliver on job-specific skill training. Although such a division of emphasis is not inherently "bad," it could cause some problems when one or the other of the two types of schools/experiences is unavailable to students and their needs are not adequately addressed.

16. Do the professional improvement opportunities afforded vocational teachers in various schools differ?

Each major segment of the Perkins Act contains some mention of the need to improve the curricula, materials, procedures, or instruction occurring in vocational programs. Such requirements indicate the weight placed on professional improvement activities as a vehicle for bringing about changes and improvements in all areas of the field.

Two studies that are somewhat tangentially related to this issue are those reported by Benson and Hoachlander (1981) and Evans (1981). Generally, these authors conclude that area vocational and vocational specialty schools are able to employ more experienced staff than are comprehensive high schools, are able to pay higher salaries, are more likely to hire additional part-time instructors, and have more flexibility in dismissing instructors. These studies do not, however, yield insights related directly to the kinds of improvement (inservice) opportunities provided the teachers in the different types of institutions studied.

A series of questions related to the frequency and nature of the professional development opportunities afforded vocational teachers in the different types of schools considered was included in the survey instruments. At first glance, the results obtained through these questions suggest that the relationship between school type and inservice training is not a simple, straight-forward relationship. One slight trend, however, that does surface from the data is that the amounts of inservice training provided teachers in area vocational schools generally appear to be somewhat greater than those afforded teachers in the two other types of schools, particularly the teachers in vocational specialty schools. The exceptions to this trend occur in the case of "small-group" inservice activities, where more such training is reported in comprehensive and vocational specialty schools; and in the case of inservice training directed toward addressing the needs of single parents, where more such training appears to be provided in comprehensive schools than in either area vocational or vocational specialty schools.

The amount of inservice training provided teachers in area vocational schools is somewhat greater than those afforded teachers in the other two types of schools.

Although these results tentatively suggest that the amounts and types of inservice provided in area vocational schools are somewhat greater than that provided in the other two types of schools, they would not support the conclusion, as suggested by some previous research, that less inservice is being provided in comprehensive schools.

17. Are vocational school personnel involved in communitywide economic development activities?

Economic development in our country is based upon a number of complex and interrelated factors, one of which is the availability of a trained, skilled work force (Grubb 1986, Marshall 1986). The role and effect of vocational education on economic development is a topic of continuing debate, one best dealt with as a separate study. However, given the relative absence of data, as well as congressional concern for this issue, the decision was made in the current study to explore the involvement as individual citizens of school personnel in economic development activities outside the classroom.

Vocational teachers are more likely to take part in economic development activities than are nonvocational teachers

Overall, the resulting data suggest that personnel in area vocational schools are generally either as involved or more involved in communitywide economic development activities than personnel in the two other types of schools. In addition, those results indicate that vocational teachers are more likely to take part in communitywide economic development activities than are nonvocational teachers. At the same time, however, the available data are silent when it comes to describing the specific nature of the activities in which these personnel are involved or the "quality" of that involvement. Furthermore, given the absence of an adequate baseline, it is not possible meaningfully to assess the adequacy of their reported involvement. Clearly, additional research is needed in order to further explore this issue.

18. Is the preparation of students for entry into postsecondary institutions emphasized differently in various types of schools?

In some quarters vocational education is perceived as strictly preparing students for "hand" occupations such as low-status, blue-collar jobs that don't require a college or professional degree (National Commission on Secondary Vocational Education 1984, Boyer 1983). Furthermore, some critics argue that participation in secondary vocational education discourages the pursuit of postsecondary education.

Generally, the results observed in the current study in relation to this important issue are in agreement with previous research findings: that is, participation in postsecondary education is positively (and significantly)

correlated with participation in the college preparatory curriculum—which is typically offered only in comprehensive schools. This strong association between school type and curricular offerings would help account for the various differences by school type observed in the current data—differences indicating that greater emphasis is placed on preparing for and participating in postsecondary education in comprehensive schools than in area vocational and vocational specialty schools.

The current results do not, however, demonstrate that participation in secondary vocational education represents an educational “dead end”, a finding which is in agreement with conclusions reached by Campbell, Gardner, and Seitz (1982). Although postsecondary attendance is emphasized more in comprehensive schools than in area vocational and vocational specialty schools, concern with such an outcome is not ignored and is viewed as a fairly prominent goal in the latter types of institutions as well. In addition, the postsecondary attendance data secured from vocational teachers suggest that between 17 percent and 23 percent of their students attend 2-year postsecondary schools and between 12 percent and 18 percent attend 4-year institutions. Although these estimates are about the same for 2-year institutions and significantly lower for 4-year institutions than those noted by nonvocational teachers for their students, they are clearly not equal to zero.

Unlike the results of the recent study by Campbell et al. (1987), which yielded no “patterns of association between institution type and postsecondary attendance” (p. 56), the current data suggest that (1) there are patterns of association between secondary school type and postsecondary attendance and (2) those patterns differ, depending on whether one is dealing with 2-year or 4-year postsecondary institutions. Significantly more students from comprehensive schools attend 4-year postsecondary institutions than do students from either area vocational or vocational specialty schools. Furthermore, (although no significant effects were noted), it appears that postsecondary participation levels of students in area vocational schools are somewhat greater than those of students in vocational specialty schools.

Prior research yielded no “patterns of association between institution type and postsecondary attendance”

19. Do articulation linkages between vocational programs differ across types of schools?

Articulation, the coordination of secondary and postsecondary programs, is advantageous to both students and education institutions. Students are frequently able to save time and money. Schools also benefit in several ways: revised and updated curricula translate into better programs, which, in turn, attract more and better students (Warmbrod and Long 1986). Given the current emphasis on strengthening the linkages between vocational programs at the secondary and postsecondary levels through articulation efforts, several items were included in the study's instruments that dealt

with describing the relative frequency with which such linkages were reported by different secondary school personnel.

Generally speaking, the results obtained in relation to the articulation issue suggest that quite a bit of interaction and (formal) articulation is occurring in over 50 percent of the schools studied and 40 percent or more of the different respondent groups. Perhaps the most interesting finding is that vocational teachers report having significantly more, continuing contacts with personnel from postsecondary institutions than do nonvocational teachers. There appear to be no systematic differences across types of schools in regard to the frequency or nature of the interactions or articulation linkages reported.

Because of the general nature of the available data, it was not possible to describe clearly and to study the specific types of articulation arrangements existent across the sampled schools. Nor was it possible to assess the quality of those linkages or agreements. Clearly, these two issues represent potential topics for further, more extended research.

20. Do business/industry linkages with secondary vocational programs differ across types of schools?

In requiring schools to work with vocational advisory and craft committees, legislators have historically acknowledged that communication between the world of education and the world of work benefits industry, students, instructors, and education institutions in important ways: appropriately trained workers for industry; work experience for students; updated skills and resources for school instructors; and improved instructional programs in schools (Franchak, Desy, and Norton 1984).

A number of items were included in the survey that would help provide a national picture of the nature of the linkages that currently exist in the field. Overall, the data suggest that vocational personnel routinely involve business/industry representatives in a variety of ways in the delineation, implementation, and evaluation of their respective programs, although the level of that involvement is relatively low. However, since no baseline data exist with which to compare the level of involvement indicated, it is not possible to judge how adequate that level is with regard to achieving the program related results needed. It can only be said that such representatives appear consistently to be consulted regarding a fairly wide array of program-related issues.

At the same time, the current results generally agree with the findings in several earlier studies that the linkages with business/industry in comprehensive schools are not as strong as those found for the two other types of schools (Peterson and Kabe 1981; Evans 1982; Benson and Hoachlander

Interactions and formal articulation is occurring in over 50 percent of the schools studied

Linkages with business/industry in comprehensive schools are not as strong as those found for the two other types of schools.

1982; Campbell et al. 1987). However, unlike those earlier studies the current data do not unequivocally support the conclusion that the reduced incidence of business/industry linkages noted for comprehensive schools necessarily represents a negative attribute of such institutions. As pointed out earlier, this difference could possibly reflect major differences in course offerings and instructional emphases/goals across institutions—for example, courses in comprehensive schools tend to reflect "career exploration" objectives and, therefore, require less frequent updating—rather than a rationale for arguing that the vocational offerings in comprehensive schools are poorer than those in area vocational and vocational specialty schools.

Addressing the Needs of At-Risk Students in Vocational Classrooms/Programs

The findings of questions 21-26 are discussed in this section. The at-risk students considered in the six research questions are dropouts, minority students, disadvantaged students, and handicapped students.

21. How do different types of schools identify, track, and address the needs of dropouts?

One of the "messages" that comes across very clearly in the Perkins Act is the need to improve access to and the quality of vocational program offerings for students from populations with special needs. Under the Perkins Act, 57 percent of the total funds available are set aside for special needs initiatives.

Dropouts, who are included in most, if not all, of the special needs populations cited in the act, represent one of the most critical and pervasive problems facing our educational system today. At present, the dropout rate from inner-city schools is estimated to be somewhere between 40 and 50 percent. Nationally, the rate probably averages 25 percent according to Weh-lage and Rutter (1986) who lay responsibility for curtailing this problem directly on the public schools.

Public education institutions have attempted to respond to the needs of dropout-prone youth by creating special programs designed to meet the perceived needs of this portion of the secondary-school population. Hamilton (1986) lists the characteristics of special programs for dropout-prone students as including a strong vocational emphasis with applied academics, a learning component outside the classroom, small class size, low student-to-teacher ratio, and individualized instruction. Weber (1986) presents a similar listing of dropout-prevention program characteristics.

Results of this current study suggest that the majority of the schools either have programs in place and/or some of the elements of prevention/recovery programs in place for dealing with both potential and actual dropouts. However, many of these efforts may not be as explicit, wholistic, or prominent as needed. For example, given its pervasiveness, it is unlikely that the

The majority of schools have programs in place or elements of dropout prevention/recovery programs

dropout problem has bypassed almost half (45 percent) of the schools studied; and yet, that is the percentage of both counselors and principals who did not indicate that they have prevention/recovery programs in place. Furthermore, both the amount and type of inservice training reported by teachers (vocational and nonvocational) and the amount and type of time reported by counselors as being spent working on dropout-related issues would seem to be limited and coincidental compared to the more extensive, focused effort described in the research as needed if the problem is to be slowed, let alone alleviated.

22. Do vocational teachers devote time to the preparation of activities and materials to meet the needs of at-risk students?

Generally, all teachers (both vocational and nonvocational) devote little time to planning and the development of activities/materials intended to address the unique needs of their at-risk students

If vocational programs are to be of real benefit to at-risk students,* standards of performance must be maintained by teachers and met by all participating students. Sarkees and Scott (1985) recommend that, "rather than lowering program standards for these students, vocational teachers need to exercise flexibility in planning and implementing instruction" (p. 251). Sarkees and Scott call for teachers to modify their curriculum and related instructional strategies to meet the individual needs of each at-risk student.

Given the emphasis in the Perkins Act on improving vocational programs and practices with regard to the needs of at-risk students, several items were included in the survey instruments that dealt with this emphasis. Those items focus directly on the time teachers spend working on developing instruction-related plans and materials for use with their at-risk students.

Generally, the study results indicate that all teachers (both vocational and nonvocational) devote relatively little time to planning and to the development of instructional activities/materials intended to address the unique needs of their at-risk students. This limited degree of emphasis is particularly obvious when reflected against the mandate in the Perkins Act that "special needs" initiatives should account for 57 percent of the funds spent. Although instruction-related planning and materials development represent only a small portion of the array of potential initiatives that could be undertaken, it would still appear that a disproportionately smaller amount of teacher time is being spent on such activities than was either intended under the Perkins Act or is required to address adequately the diverse needs of the various "special needs" populations to be served.

*The term "at-risk," as used in this report, includes students with physical, mental, or learning disabilities, economic or academic disadvantages, or who, for any of a number of reasons suggested by the available literature are deemed to be dropout prone.

23. Do the instructional materials and procedures used in classes with many at-risk students differ from those used in classes with fewer at-risk students?

The statistics are clear regarding the cost to our society and our economy when students, including those deemed to be at-risk, leave school with a lack of marketable skills. Local schools have responded to this issue and to related legislative requirements by mainstreaming an increasing number of special needs students into vocational education. Successful mainstreaming involves unflagging commitment and cooperation of teachers, counselors, parents, and administrators; adaptation of curriculum and teaching strategies to accommodate student styles and limitations; and effective reward/reinforcement systems for individuals that do not negatively affect class standards.

No systematic pattern of differences in instructional practices was observed

An effort was made in the current study to secure data that could help to describe how selected instructional materials and activities used in classrooms that involve larger concentrations of such students differ, if at all, from the practices used in classrooms with smaller concentrations of those students. The assumption made when initiating this effort was that attempts to accommodate and address the unique needs of at-risk students could, even in mainstreamed contexts, necessitate the use of different and more diverse types of instructional practices. The specific groups of at-risk students considered were "minority," "handicapped," and "disadvantaged" students.

The results obtained in relation to this question indicate that no systematic pattern of differences in instructional practices was observed across classes with varying concentrations of at-risk students. It would appear that the instruction that occurs across classes that include high concentrations of at-risk students is very much like the instruction provided in other classes whether they be other vocational or other nonvocational classes. No substantial patterns of effort were noted in regard to the differential structuring/organizing of instruction in order to accommodate more adequately the unique learning needs of the different groups of at-risk students considered. Given these results and the basic assumption noted earlier, the instructional practices employed in vocational, and in nonvocational classrooms will have to reflect more diverse patterns of structure and effort if the intentions reflected in the Perkins Act regarding improved programming for at-risk groups are to be achieved.

24. Are IEPs developed for handicapped students in vocational programs and communicated to appropriate staff?

The individualized education program (IEP) is the central document, mandated by the Education for All Handicapped Children Act of 1975, used to

ensure that a handicapped child receives appropriate educational opportunities. Although the task of ensuring compliance with the act falls to general or special education administrators, vocational educators do have a role in developing and implementing IEPs.

Although the involvement of vocational teachers in IEP planning meetings is not mandated by the law, their presence is considered to be good educational practice and critical to the successful team effort to provide relevant education for special needs learners (Sarkees and Scott 1985, p. 141). The vocational educator's input is especially critical when a student's enrollment in a vocational class requires some modification of activities and/or facilities and equipment to accommodate the handicapping condition.

The data secured using questions related to the IEP preparation and review suggest that the level of involvement of secondary teachers and counselors in either the development or review of IEPs for the handicapped students they serve is generally limited. Although the data provide no direct insights into the adequacy or quality of that involvement, the indicated time commitments made—less than an hour of a teacher's or counselor's time per week—for such an important part of the program planning process for what is normally estimated as about 9 percent of the school population would seem to be inadequate.

Furthermore, the results suggest that vocational teachers are currently even less involved in such planning efforts than are nonvocational teachers. It is reasonable to assume that the involvement in IEP planning of all teachers, and especially vocational teachers, will need to increase to accommodate (1) the recent influx of more handicapped students into vocational programs; (2) the specific emphasis in the Perkins Act on improved programming for at-risk students, which includes the handicapped; and (3) formalized plans that are currently being proposed as an integral part of the program planning efforts undertaken for many groups of at-risk students.

25. How much training have vocational teachers received to prepare them to serve LEP, handicapped, and other at-risk students?

The U.S. Department of Education has claimed that "vocational educators are not being afforded the opportunity to acquire the skills and abilities necessary to work effectively with the handicapped in vocational education" (Sarkees and Scott 1985, p.3). This is true not only as it applies to teachers of handicapped students but to all teachers of at-risk students. Because "we know that students appearing to be less able can and do approach the learning levels of those successful students when instruction is dovetailed to their special needs," (Goodlad 1984, p. 104) the amount of training vocational teachers receive in dealing with at-risk students is an important concern.

The level of involvement of teachers and counselors in either the development or review of IEPs for handicapped students is generally limited and vocational teachers are less involved in such planning efforts than are non-vocational teachers.

Given the emphasis in the Perkins Act on improving the vocational education opportunities afforded at-risk students and knowing the central role teachers play in that process, an effort was made in the current survey to assess the background/training of vocational teachers in working with special needs youth. Overall, the observed results suggest that teachers currently receive very limited training—and vocational teachers receive even less than nonvocational—both through formal college courses and inservice. In working with and addressing the unique needs of various at-risk students. If the intent of the Perkins Act with regard to meeting the needs of at-risk students is to be achieved, not only does the disparity between the two groups of teachers need to be erased, but the overall level of preparation and training of both groups in all probability needs to increase significantly.

Teachers receive very limited training—and vocational teachers receive even less than non-vocational teachers

26. Are secondary vocational education programs and facilities being used to meet the needs of adults, including inmates?

That education is delivered just to young people, in schools or colleges, or for a specific job probably always has been a far too simplistic view of a dynamic process that occurs in varied settings, for the young, middle aged, and old alike (Darkenwald and Merriam, p. 2). The current popularity of the concept "life-long learning" is grounded in the realities of adults who are participating in educational programs from a variety of societal contexts. Authors of the Carl D. Perkins Vocational Education Act, recognizing that the needs of some categories of adults may currently be addressed inadequately by vocational programming, provide for funding "to meet the special needs of, and to enhance the participation of adults who are in need of training and retraining; individuals who are single parents or homemakers; and criminal offenders who are serving in a correctional institution." (U.S. Congress 1984, p. 17)

About 6 percent of the students across all three types of schools are adults and about 40-50 percent of the schools offer programs for adult learners

Anticipating the need for more expanded and diversified training and retraining of our adult population in the near future, several items were included in the study's instruments that would help provide a clearer national picture of the extent to which vocational programs and facilities are currently used to address that need. The general finding is that training/retraining in secondary vocational settings for different groups of adults is occurring more in vocational specialty, and especially in area vocational schools, than in comprehensive schools. Furthermore, it would appear that about 6 percent of the students across all three types of schools are adults and that roughly 40-50 percent of the sampled schools offer courses or other special programs that directly address the needs of adult learners. The frequency with which such courses and special programs are offered in area vocational schools is greater than it is in either vocational specialty or comprehensive schools.

Overall, the preceding summary suggests that the secondary schools which offer vocational education programs are trying to respond to the current need for adult training/retraining facing our work force. The available data, however, provide no insights into either the adequacy or quality of those responses. This, along with the fact that the sample sizes were limited, argues for more intensive research into this issue in a larger sample of schools. In addition, any future related research should attempt to place secondary vocational education within the overall adult educational delivery system and delineate both its role and summative implications within that context.

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