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## ABSTRACT

In 1986, the National Center for Research in Vocational Education undertook a major data collection project, Understanding the Dynamics of Secondary Vocational Classrooms--A Prerequisite to Improvement. The study's primary purpose was to collect national data on the instructional content and processes of occupational education programs at the high school level. The resultant national database includes observations of 893 classrooms in 120 high schools that were selected by using a stratified random sampling procedure. It was concluded that although vocational classrooms offer frequent and varied opportunities for reinforcing and enhancing students' basic skills, far too many of these opportunities are lost. Generally, when basic skills are part of the instruction occurring in vocational classrooms, teachers use more traditional instructional methods. The use of competency-based strategies and procedures is quite prevalent in vocational classrooms nationally. No significant differences were found in vocational classrooms in comprehensive, area vocational, and vocational specialty schools. Neither were any significant differences found between the instructional materials and activities used by degreed and nondegreed vocational teachers. (Over half of this report consists of detailed discussions of responses to each of the study's 26 questions. The survey instruments and record layouts for the three project data files--schools, teachers, and classrooms--are appended.) (MN)



**THE DYNAMICS OF SECONDARY  
VOCATIONAL CLASSROOMS**

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## TABLE OF CONTENTS

LIST OF TABLES . . . . .	vii
LIST OF FIGURES . . . . .	ix
LIST OF EXHIBITS . . . . .	xiii
FOREWORD . . . . .	xv
EXECUTIVE SUMMARY . . . . .	xvii
INTRODUCTION . . . . .	1
Background . . . . .	5
Approach . . . . .	16
METHODOLOGY: PARTICIPANTS, SURVEY INSTRUMENTS, OBSERVATION SYSTEM, AND RELATED PROCEDURES . . . . .	33
Overview . . . . .	33
Sample Design and Implementation. . . . .	33
Respondents/Data Sources . . . . .	49
Survey Instruments . . . . .	50
Classroom Observation System . . . . .	61
Procedures Used During Data Collection . . . . .	76
METHODOLOGY: DATA CODING AND PROCESSING . . . . .	101
Specifying the Data Identification Codes . . . . .	102
Assigning the Data Identification Codes . . . . .	106
Coding the Interview Data . . . . .	110
Coding the Questionnaire Data . . . . .	113
Coding the Classroom Observation Records . . . . .	116
Coding the Summary Data Forms . . . . .	120
Coding the Student Interviews . . . . .	121
Coding the Syllabus Evaluation Forms . . . . .	122
Processing the Data . . . . .	123
Checks on the Data . . . . .	124
Creating the Master Data Files . . . . .	125
RESULTS . . . . .	127
Overview . . . . .	127
To What Extent Are Basic Skills Enhanced and Reinforced in Vocational Classrooms/Programs? (Question 1a) . . . . .	130
What Kinds of Teaching Activities and Materials Are Used in Vocational Classrooms to Help Reinforce and Enhance Students' Basic Skills? (Question 1b). . . . .	139
To What Degree Are Higher-Order Cognitive Skills such as Problem Solving Taught in Vocational Classrooms? (Question 1c) . . . . .	144
How Much Emphasis in Vocational Programs Is Placed on Fostering/Improving Students' Employability Skills and Work Habits? (Question 1d) . . . . .	154

How Dated Are the Skills Being Taught and the Materials/Equipment Being Used in Vocational Classrooms? (Question 1e) . . . . .	160
Are Secondary Vocational Curricula Competency Based? (Question 1f) . . . . .	168
Do Vocational Teachers Use a Larger Variety of Instructional Methods and Materials than Teachers in Other Areas? (Question 1g) . . . . .	172
To What Extent are Positive and Negative Feedback, Reinforcement, and Praise Used in Vocational Classrooms? (Question 1h) . . . . .	180
Is the Relative Emphasis Placed on Basic Skills Reinforcement/Enhancement Different in Area versus Vocational Specialty versus Comprehensive High Schools? (Question 2a) . . . . .	184
Do the Currentness of the Job Skills, Materials, and Equipment Observed in Vocational Classrooms Differ across Different Types of Schools? (Question 2b) . . . . .	197
Do Degreed Vocational Teachers Use More of a Variety of Instructional Activities and Materials Than Do Nondegreed Teachers? (Question 2c) . . . . .	204
How Are Reported Changes in High School Graduation Requirements Related to Vocational Enrollments across Different Types of Schools? (Question 2d) . . . . .	209
To What Extent Do Students in Vocational Classes in Different Types of Schools Have Access to Counselors and Selected Counseling Services? (Question 2e) . . . . .	213
What Linkages Exist between Different Types of Schools That Offer Vocational Programs and Various Community-Based Organizations? (Question 2f) . . . . .	219
How Are Institutional Type, Size, and Location Related to Numbers and Kinds of Vocational Program Offerings? (Question 2g) . . . . .	223
What Kinds of Professional Improvement (Inservice) Opportunities Are Afforded Vocational Teachers, and Do Those Opportunities Differ across Different Types of Schools? (Question 2h) . . . . .	228
Are the Personnel Involved in the Delivery of Secondary Vocational Programs Directly Involved in Communitywide Economic Development Activities? (Question 2i) . . . . .	233
To What Extent Is the Preparation of Students for Entry into Postsecondary Institutions Emphasized in Different Schools That Offer Vocational Programs? (Question 2j) . . . . .	237

## LIST OF TABLES

### Table

1.	CURRENT AND EMERGING PARADIGMS OF VOCATIONAL EDUCATION . . . . .	15
2.	PRELIMINARY DATA--REGIONS AND STATES . . . . .	35
3.	TYPES OF SCHOOLS FOUND IN DIFFERENT GROUPS OF STATES . . . . .	37
4.	SUMMARY OF SAMPLED SCHOOLS BY REGION, TYPE, AND SETTING . . . . .	42
5.	COMPARISON OF THE SAMPLE OF SCHOOLS WITH THE UNIVERSE OF SCHOOLS BY LEVEL OF URBANIZATION . . . . .	43
6.	DESCRIPTIVE SUMMARY OF CLASSROOM SAMPLE . . . . .	47
7.	SUMMARY OF PROJECT-RELATED RESPONDENT GROUPS/DATA SOURCES . . . . .	51
8.	CORRESPONDENCES AMONG THE AREAS OF EMPHASIS, RELATED POLICY QUESTIONS AND ELEMENTS OF THE STUDY'S CONCEPTUAL FRAMEWORK . . . . .	54
9.	SUMMARY DESCRIPTIONS OF THE SURVEY INSTRUMENTS . . . . .	56
10.	MEMBERS OF THE INSTRUMENT REVIEW PANEL . . . . .	60
11.	RESPONSE RATES ACROSS THE VARIOUS SURVEY INSTRUMENTS . . . . .	62
12.	HYPOTHETICAL EXAMPLES OF INSTRUCTIONAL ACTIVITIES OCCURRING IN TWO CLASSROOMS . . . . .	68
13.	SCHEDULE OF 1986 OBSERVER TRAINING SESSIONS . . . . .	74
14.	OVERVIEW OF 26 RESEARCH QUESTIONS ADDRESSED . . . . .	128

## LIST OF TABLES

### Table

1.	CURRENT AND EMERGING PARADIGMS OF VOCATIONAL EDUCATION . . . . .	15
2.	PRELIMINARY DATA--REGIONS AND STATES . . . . .	35
3.	TYPES OF SCHOOLS FOUND IN DIFFERENT GROUPS OF STATES . . . . .	37
4.	SUMMARY OF SAMPLED SCHOOLS BY REGION, TYPE, AND SETTING . . . . .	42
5.	COMPARISON OF THE SAMPLE OF SCHOOLS WITH THE UNIVERSE OF SCHOOLS BY LEVEL OF URBANIZATION . . . . .	43
6.	DESCRIPTIVE SUMMARY OF CLASSROOM SAMPLE . . . . .	47
7.	SUMMARY OF PROJECT-RELATED RESPONDENT GROUPS/DATA SOURCES . . . . .	51
8.	CORRESPONDENCES AMONG THE AREAS OF EMPHASIS, RELATED POLICY QUESTIONS AND ELEMENTS OF THE STUDY'S CONCEPTUAL FRAMEWORK . . . . .	54
9.	SUMMARY DESCRIPTIONS OF THE SURVEY INSTRUMENTS . . . . .	56
10.	MEMBERS OF THE INSTRUMENT REVIEW PANEL . . . . .	60
11.	RESPONSE RATES ACROSS THE VARIOUS SURVEY INSTRUMENTS . . . . .	62
12.	HYPOTHETICAL EXAMPLES OF INSTRUCTIONAL ACTIVITIES OCCURRING IN TWO CLASSROOMS . . . . .	68
13.	SCHEDULE OF 1986 OBSERVER TRAINING SESSIONS . . . . .	74
14.	OVERVIEW OF 26 RESEARCH QUESTIONS ADDRESSED . . . . .	128



## LIST OF FIGURES

### Figure

1. An alternative role for vocational education in preparing skilled workers for the year 2000 and beyond . . . . . 2
2. Determinants of excellence in vocational education, 1910-2000 . . . . . 6
3. Framework describing the setting within which vocational education operates . . . . . 25
4. Overview of the role played by the study's conceptual framework . . . . . 29
5. State listing of potential sample of schools . . . . . 39
6. Heuristic model describing the approach used when developing the study instruments . . . . . 53
7. Continuum of observation types . . . . . 66
8. General overview of the classroom observation process . . . . . 71
9. Results related to question 1a--  
To what extent are basic skills enhanced and reinforced in vocational classrooms/programs? . . . . . 135
10. Results related to question 1b--  
What types of teaching activities and materials are used in vocational classrooms to help reinforce and enhance students' basic skills? . . . . . 141
11. Results related to question 1c--  
To what degree are higher-order cognitive skills such as problem solving taught in vocational classrooms? . . . . . 150
12. Results related to question 1d--  
How much emphasis in vocational programs is placed on fostering/improving students' employability skills and work habits? . . . . . 156
13. Results related to question 1e--  
How dated are the skills being taught and the materials/equipment being used in vocational classrooms/programs? . . . . . 165
14. Results related to question 1f--  
Are secondary vocational curricula competency based? . . . . . 171

LIST OF FIGURES--Continued

Figure

- 15. Results related to question 1g--  
Do vocational teachers use a larger variety of instructional methods and materials than teachers in other areas? . . . . . 175
- 16. Results related to question 1h--  
To what extent are positive and negative feedback, reinforcement, and praise used in vocational classrooms? . . . . . 183
- 17. Results related to question 2a--  
Is the relative emphasis placed on basic skills reinforcement/enhancement different in area versus vocational specialty versus comprehensive high schools? . . . . . 193
- 18. Results related to question 2b--  
Does the currentness of the job skills, materials, and equipment observed in vocational classrooms differ across different types of schools? . . . . . 200
- 19. Results related to question 2c--  
Do degreed vocational teachers use more of a variety of instructional activities and materials than do non-degreed teachers? . . . . . 206
- 20. Results related to question 2d--  
How are reported changes in high school graduation requirements related to vocational enrollments across different types of schools? . . . . . 212
- 21. Results related to question 2e--  
To what extent do students in vocational classes in different types of schools have access to counselors and selected counseling services? . . . . . 216
- 22. Results related to question 2f--  
What linkages exist between different types of schools that offer vocational programs and various community-based organizations? . . . . . 222
- 23. Results related to question 2g--  
How are institutional type, size, and location related to numbers and kinds of vocational program offerings? . . . . . 224
- 24. Results related to question 2h--  
What kinds of professional improvement (inservice) opportunities are afforded vocational teachers and do those opportunities differ across different types of schools? . . . 230



LIST OF FIGURES--Continued

Figure

25. Results related to question 2i--  
 Are the personnel involved in the delivery of secondary vocational programs directly involved in communitywide economic development activities? . . . . . 236

26. Results related to question 2j--  
 To what extent is the preparation of students for entry into postsecondary institutions emphasized in different secondary schools? . . . . . 240

27. Results related to question 2k--  
 To what degree do articulation linkages exist between vocational programs at the secondary and postsecondary levels? . . . . . 249

28. Results related to question 2l--  
 What kinds of inputs are solicited from business/industry and labor representatives, and how are they used to improve secondary vocational programs? . . . . . 255

29. Results related to question 3a--  
 Is anything being done in different types of schools that offer vocational programs to identify, track, and address the unique needs of dropout prone and out-of-school youth? . . . 265

30. Results related to question 3b--  
 How much time do vocational teachers devote to preparation of alternative activities and materials to better meet the needs of at-risk students? . . . . . 271

31. Results related to question 3c--  
 Do the instructional materials and procedures used in classes with higher concentrations of specific at-risk students differ from those used in classes with lower concentrations of such students? . . . . . 276

32. Results related to question 3d--  
 Are IEPs routinely developed for handicapped students in vocational programs across different types of schools and communicated to appropriate staff? . . . . . 285

33. Results related to question 3e--  
 How much training have vocational teachers received to prepare them to provide critical support services to LEP, handicapped, and other at-risk students? . . . . . 291

34. Results related to question 3f--  
 To what extent are secondary vocational education programs and facilities used to meet the needs of adults, including inmates? . . . . . 296

## LIST OF EXHIBITS

### Exhibits

1.	SELECTION AND SCHEDULING OF VOCATIONAL COURSES FOR OBSERVATIONS . . . . .	45
2.	SELECTION AND SCHEDULING OF NONVOCATIONAL (ACADEMIC) COURSES FOR OBSERVATIONS . . . . .	46
3.	SELECTION OF SCHOOLWIDE SAMPLE OF TEACHERS . . . . .	52
4.	AGENDA FOR TRAINING SESSION FOR CLASSROOM DYNAMICS STUDY . . . . .	73
5.	EXPLANATORY MATERIALS . . . . .	78
6.	FOLLOW-UP LETTER . . . . .	81
7.	VOCATIONAL CLASSROOM DYNAMICS PROJECT CONTACT RECORD . . . . .	82
8.	CONTACT AND PLANNING GUIDE . . . . .	83
9.	PACKET INVENTORY CHECKLIST . . . . .	86
10.	SUMMARY DATA FORM . . . . .	88
11.	SITE SCHEDULE . . . . .	91
12.	QUESTIONNAIRE TRACKING FORM . . . . .	92
13.	QUESTIONNAIRE ENCLOSURE: INTRODUCTORY LETTER . . . . .	94
14.	PROJECT PROFILE . . . . .	95
15.	SYLLABUS EVALUATION FORM . . . . .	99
16.	CENSUS DATA SOURCE DOCUMENT . . . . .	103
17.	PROJECT DATA FILES . . . . .	104
18.	CODES FOR CLASSIFICATION OF SECONDARY SCHOOL COURSES . . . . .	106
19.	EXAMPLE OF A COMPLETED GENERAL SCHOOL DATA FORM . . . . .	108
20.	IDENTIFICATION CODES FOR A CLASSROOM OBSERVATION BOOKLET . . . . .	109
21.	IDENTIFICATION CODES FOR A PRINCIPAL'S QUESTIONNAIRE . . . . .	109
22.	PREPARING INTERVIEW RESPONSES FOR KEYPUNCHING . . . . .	112
23.	KEYPUNCHER'S GUIDE FOR A PORTION OF THE CLASSROOM OBSERVATION BOOKLETS . . . . .	117
24.	GENERAL UNDERSTANDINGS EVOLVING FROM THE COGNITIVE SCIENCE LITERATURE . . . . .	149

## FOREWORD

Efforts to improve schools 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. Adding to the requirements for a fuller understanding of vocational education settings and processes is the need to address the numerous claims for and criticisms of vocational education that have appeared in recent studies and commissioned reports concerning the quality of American education. These claims and criticisms have been based largely upon anecdotal information, contradictory perceptions of the teaching-learning process, and inferences drawn from a limited number of research studies.

This document is the preliminary result of one of the most significant studies in vocational education undertaken in recent time. It contains summaries of selected information gleaned from a broad spectrum of schools, classrooms, school personnel, and students that should lead to the improvement of schools and related vocational programs. Addressing a range of topics, this report represents the research potential afforded by the study's comprehensive database, which will continue to be available as a rich source of information for future analyses. This document will be of interest to educational researchers, planners, and policymakers at state and national levels.

Dr. James M. Weber conceptualized this study, developed the requisite instruments and procedures, and implemented the study

over a 2-year period. Nancy Puleo served a major role in the study's coordination, data collection, data processing, and technical writing. Critical assistance in data collection, data processing, and technical writing was also provided by Paula Kurth. Marta Fisch, in addition to aiding the collection of data, provided essential systems inputs related to processing the data and defining the resulting database. Dave Schaffner assisted in executing the required statistical analyses and preparing the resulting tabular summaries. The study was conducted in the National Center's Evaluation and Policy Division headed by Dr. N. L. McCaslin.

Appreciation is also extended to Dr. William Hull who assisted with data collection and the initial training of field site representatives and to Jennifer Humphries Cummings who helped with preliminary planning activities and a major portion of the data collection. Special thanks are also due to Dr. Robert E. Taylor, Executive Director Emeritus, without whose vision and unwavering support this study could not have been conducted. Finally, a data collection effort of this magnitude would have not succeeded without the full, generous cooperation of the state and local personnel involved with the 120 schools that were visited.

This project was sponsored by the Office of Vocational and Adult Education, U.S. Department of Education.

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

## EXECUTIVE SUMMARY

Given the significant role work has in our society, it is generally agreed that work-related education needs to be given careful consideration and scrutiny as a major factor in the preparation of our work force. In relation to this issue, Goodlad (1984) notes:

In our society people spend a large amount of their time working. Therefore, an individual's personal satisfaction will be significantly related to satisfaction with his or her job. In order to make an intelligent career decision, one needs to know one's own aptitudes and interests as they relate to career possibilities. Next, one must be able to obtain whatever specialized training is necessary to pursue the vocation selected and to develop attitudes that will help one succeed in the field. This goal is important also for the continued growth and development of society. (p. 52)

Although many other individuals have expressed opinions and have speculated on the role and importance of vocational education in the United States, to this point, no systematic gathering of the best information possible regarding the policy issues and concerns facing the field has been conducted. The identification of such issues and concerns as well as the explication and comparison of related policy alternatives is heavily dependent upon information that is timely, relevant, objective, reliable, valid, and usable. Generally speaking, however, such information is both costly and difficult to acquire. As a result, all too often policy-related analyses in education, including vocational education, are based principally upon "expert" opinion, anecdotal information, contradictory perceptions, and inferences drawn from limited numbers of unrelated research studies. The absence of

such systematic data has been most prevalent in the area of vocational-technical education.

The need for such systematic data was highlighted by Goodlad (1984), who argued that efforts to improve schools and school programs (including vocational programs) require a greater understanding of those institutions and what goes on within them (i.e., defines their ethos). That understanding is an essential ingredient in efforts to improve the quality and effectiveness of vocational education, two basic outcomes mandated under the Carl D. Perkins Vocational Education Act.

In an effort to help respond to the informational void noted above, in 1986 the National Center for Research in Vocational Education undertook a major data collection project, Understanding the Dynamics of Secondary Vocational Classrooms--A Prerequisite to Improvement. The primary purpose of that study was to collect systematic, national data on the content, processes, and outcomes of occupational education programs at the high school level. The resulting database represents a substantial, unique resource for looking at different national policy concerns and related alternatives, particularly concerns focused on the delivery of work-related instruction at the classroom level.

Included in the national database are observations of 893 classrooms in 120 high schools. The classrooms in each school were selected using a stratified random sampling procedure so as to represent each vocational service area offered in the school plus two nonvocational classes offered either in the school or its affiliated feeders (where applicable). The 120 schools constitute



an unbiased, nationwide sample of high schools that offer 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. An overview of the sampled classrooms and schools is presented in table 1i.

Each of the classrooms included in the project sample was observed by one assigned observer on two different occasions (2 class periods on two different days) during a 1-week period. Then the data were accumulated over occasions (i.e., class periods) into a single observational protocol per classroom. Aggregating the observational data in this way served to increase their validity by increasing the generalizability of the observations over time. Furthermore, during the collection of these data individual observers were assigned so that they visited no state more than once, and they visited each type of school sampled. Such restrictions helped guard against the results being confounded by individual observer's idiosyncrasies.

The different groups of responder<sup>s</sup>, who provided data for the study, as well as the types of data they provided, are summarized in table 2i. When reviewing that table, it should be remembered that--

- data were collected from two subsamples of teachers in each school-one subsample consisted of those teachers whose classrooms were actually observed during the study and the second subsample consisted of a random sample of nonobserved teachers in each sampled school.

TABLE 1i

## THE SAMPLE OF CLASSROOMS/SCHOOLS

Unit	Characteristics	
	Speciality	
	<u>Vocational</u>	<u>Non-Vocational</u>
<b>Classrooms</b>		
(1) Numbers	649	244
(2) Size (Avg. No. Students)	16.1	23.1
(3) (a) Avg. % Black Students	16	14
(b) Avg. % Hispanic Students	9	9
(4) Avg. % Female Students	47	43
(5) Avg. % Handicapped Students	7	3
<b>Schools</b>		
(1) Type:		
(a) Comprehensive-50%		(b) Area Vocational-37%
		(c) Vocational Speciality-13%
(2) Size:		
(a) Students-Mean = 947		(b) Teacher-Mean = 51.7
(3) Location:		
(a) Rural-32.7%		(b) Suburban-29.8%
		(c) Urban-37.5%
(4) Regions:		
(a) Northeast-24%		(b) Central-25%
(c) Southeast-13%		(d) West-38%
(5) (a) Average % Black Students	-12.8	Range 0 to 99
(b) Average % Hispanic Students	- 8.2	Range 0 to 93
(6) Average % of Community Who Are Economically Disadvantaged		23.0
(7) Average % of students from families with incomes:		
(a) Above \$25,000	20.4	Range = 0 to 95
(b) Below \$10,000	9.6	Range = 0 to 99

TABLE 2i

## SUMMARY OF THE RESPONDENTS AND TYPES OF DATA THAT DEFINE THE DATABASE

Respondents (Data Sources)	Numbers Completed		
	Interviews	Questionnaires	Observations
o Principal	117	107	(Not Applicable)
o Counselor	116	114	(Not Applicable)
o Teachers (a) Observed	850	737	(Not Applicable)
(b) Nonobserved	(Not Applicable)	1514	(Not Applicable)
o Students (Observed classes only)	4389	(Not Applicable)	(Not Applicable)
o Classrooms*	(Not Applicable)	(Not Applicable)	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.

- data were collected from students in each of the observed classrooms via a small group interview process that typically involved five or six students.
- 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 reports/documents containing outcome data that were reviewed/evaluated.

The actual database that was generated is defined by three major data files. Those three files are as follows:

- School File, which contains data on 496 variables for each of the 120 sampled schools
- Teacher File, which contains data on a total of 267 variables for each of 2251 teachers (737 observed and 1514 nonobserved)
- Classroom File, which is defined by 2,682 variables for each of the 893 classrooms observed during the study

Following the preparation of these different data files, they were used to address a limited number of the total, potential set of research questions that could be explored. In all, 26 such questions were considered. Those different questions involved 13 major policy issues/concerns gleaned from a review of a number of the recent reform reports, the Carl D. Perkins Vocational Education Act, and other pertinent literature, for example, The Unfinished Agenda (National Commission on Secondary Vocational Education 1984). The 13 areas addressed were basic skills; at-risk students; access and equity; transferable skills; career guidance; JTPA/CBO and vocational education linkages; institutional characteristics; teacher education; private sector-vocational education linkages; economic development; currentness of vocational curricula, equipment, and materials; postsecondary; and adults, including inmates.

The general findings obtained in relation to the designated set of 26 questions included the following:

- 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 is 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.
- 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 as has been depicted in some sources (e.g., Goodlad [1984] and Boyer [1983]).
- It appears that at the national level the use of competency-based strategies and procedures is quite prevalent in vocational programs (i.e., in 60 percent 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 model 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.
- 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.

- 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.
- Basically the instructional materials and activities observed being used by degreed and nondegreed vocational teachers in their classrooms were the same.
- The data clearly show that the recent changes in high school graduation requirements have generally led to decreased enrollments and that those changes have not differentially affected vocational enrollments 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 pretty 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" (Campbell, Gardner, and Seitz [1982])-- vocational teachers reported that between 17 and 23 percent of their students attend 2-year post-secondary 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.
- 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.
- Although personnel in about 55 percent of the schools studied report either having dropout prevention/recovery programs in place or having elements of such programs in place, the amounts of time reported by school personnel on this problem (e.g., participating in related inservice activities and working with dropout-prone students) 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 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 vocation-related 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.



## INTRODUCTION

According to a report by the Education Commission of the States (1985), "A growing proportion of our young people are not making a successful transition to productive adult lives. They are paying a heavy price. We as a society are paying a heavy price. In the years ahead the costs are going to get higher." If our vocational-technical education and training system is to help reverse this trend, as well as help train (and retrain) a significant proportion of the workers for the year 2000, then one central issue that needs to be addressed is What skills, knowledge, and attitudes will be required of future workers in order for us to remain competitive in the world marketplace, and how can they be provided effectively by our education and training institutions?

As shown in figure 1, vocational education has a critical role to play in resolving this question. The centrality of that role was reinforced by President Reagan when he stated that

America has no higher stake than in the quality of your education . . . We should see that all of our young people get a good grounding in English and literature, history, math, science and other basics . . . [but] we must also recognize that our vocational classrooms are just as important as any other.

The results of a recent Gallup Poll of the public's attitude toward the public schools (Gallup 1984) generally support this perspective. In that survey 84 percent of the respondents, as compared to 64 percent in 1981, felt that vocational courses (outranked only by mathematics and English) should be required for

students not planning to go to college. Furthermore, 37 percent felt that some vocational education should be required even for students who are planning on attending college.

Despite this substantial and growing public sentiment regarding the importance of vocational education, it is still widely 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). As a result, vocational education is relegated to second-class or peripheral status by many people, including many educators. Furthermore, it has been argued that vocational education, particularly at the secondary school level--

- provides a tenuous link, at best, to job opportunities--for example, it provides no employment advantages over those afforded by a general education curriculum (Osterman 1980) except in the "secretarial sciences" (Woods and Haney (1981);
- provides training for low-paying, dead-end jobs that require little, if any, formal education, not for high-tech growth occupations, which required more technical training than most high schools can provide (Boyer 1983);
- involves skills that are outdated or outmoded, do not reflect current business and manufacturing practices, and are often taught using facilities and equipment that should have been replaced years ago (Woodruff 1978);
- takes up time that students need to use for learning the basics and for acquiring a quality education (Boyer 1983, p. 123); and
- involves, by virtue of its association with "low-track" students, activities and skills that are far less challenging, less stimulating and effective, and at a lower level of cognitive processes than

students not planning to go to college. Furthermore, 37 percent felt that some vocational education should be required even for students who are planning on attending college.

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- involves, by virtue of its association with "low-track" students, activities and skills that are far less challenging, less stimulating and effective, and at a lower level of cognitive processes than

those required in "high-track" classes (Oakes 1980).

In contrast to such arguments, advocates of vocational education contend that it--

- serves as a powerful motivator for students and has positive ramifications for addressing the needs of many at-risk students, such as the disadvantaged, potential dropouts, or handicapped (Overman 1980);
- incorporates specific strategies for identifying job-related changes and systematically updating training so as to incorporate those changes (National Commission on Secondary Vocational Education 1984);
- offers a variety of opportunities for reinforcing and enhancing students' basic skills in applied contexts that have direct relevance and transferability to the real world (Carnegie Foundation 1982);
- involves the teaching of problem solving and other higher-order analytical skills, not just simple rote skills (National Commission on Secondary Vocational Education 1984); and
- affords students opportunities to acquire basic work habits and values, career decision-making skills, job search skills, and so on, that are needed to secure and retain jobs successfully (National Commission on Secondary Vocational Education 1984).

To date, these kinds of conflicting claims regarding vocational education's role and potential for achieving the kinds of outcomes needed over the next decade have been based largely upon--

- anecdotal information,
- a maze of contradictory perceptions regarding the teaching-learning process (Kaplan 1985), and
- inferences drawn from a limited number of unrelated research studies, many of which rely on data that are 5 years old or more.

No systematic database has existed that could serve as both a benchmark and framework for evaluating such contradictory arguments, for describing the key factors that operationally define what goes on in vocational classrooms or the context within which they function, or serving as a baseline for evaluating the effects of different program improvement initiatives under the current federal vocational legislation. The purpose of the study described herein has been to help address this informational void by collecting a comprehensive, national database that could be used to assess and describe systematically the dynamics of high school vocational classrooms and to serve as the benchmark noted above. The three objectives used to operationalize and delineate that purpose were as follows:

- To identify and describe key content and process characteristics that define instruction in vocational (and nonvocational) classrooms
- To identify contextual factors that appear to affect instruction that occurs in vocational classrooms
- To describe how instruction in vocational classrooms relates to the learning needs of students from populations with special needs

### Background

Our vocational education and training system is continually changing (albeit, slowly) to meet changing societal needs, pressures, and priorities. It was initiated under conditions not too unlike those existing today: a major structural shift in the nation's economy and a growing threat of foreign competition (Rosenfeld 1986). As shown in figure 2, from the forties through the seventies, that system, although continuing to address basic

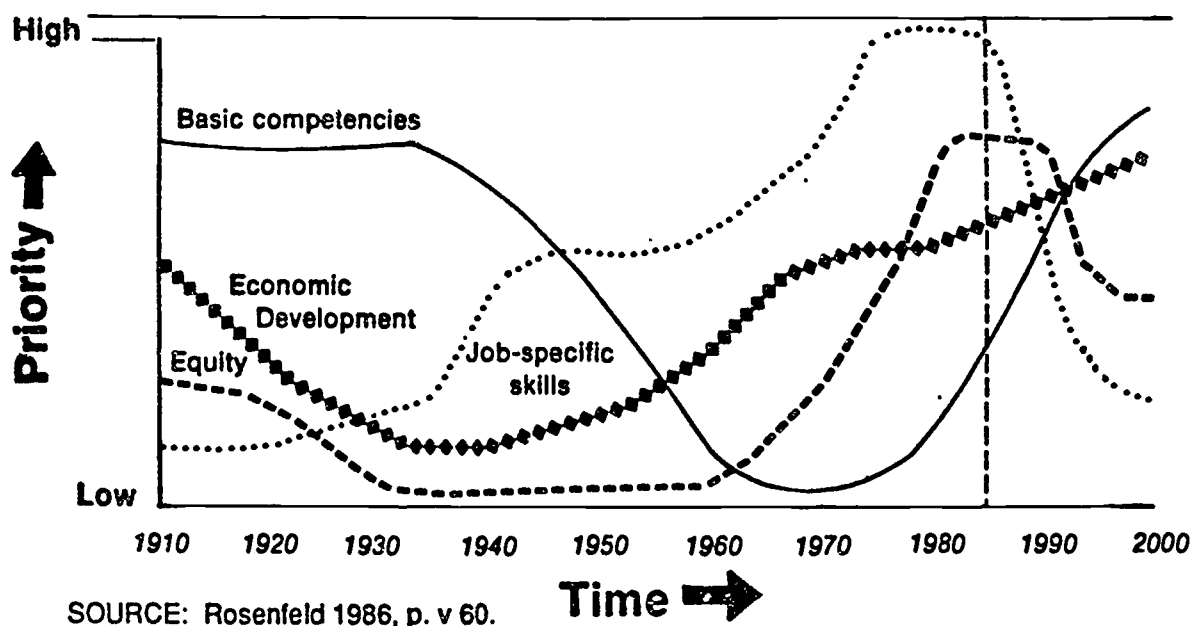


Figure 2. Determinants of excellence in vocational education, 1910-2000

skills competencies, placed an increasing emphasis on job-specific skills--an emphasis consistent with the needs of an industrial society based primarily upon manufacturing and production, with its inherent need for trained workers to do very specific jobs (Daggett 1984, Pratzner 1987).

During the 1960s, this emphasis was heightened even more by federal legislation, and the key purposes of vocational-technical education were viewed as immediate employment and job-specific training. Even the Council of Chief State School Officers (1982)

relegated such skills as decision making, basic literacy, and organizational leadership to "secondary purposes."

In the first half of the 1980s, changes in our Nation's competitive posture and workplace itself, as well as concern about the competence of our high school graduates, led to the publication of numerous investigative and prescriptive reports (e.g., Action for Excellence: A Comprehensive Plan to Improve Our Nation's Schools [Education Commission of the States 1983]; Educating Americans for the 21st Century [National Science Foundation 1983]; Nation at Risk [National Commission on Excellence in Education 1983]) on what was right and what was wrong with education in the United States, particularly secondary education. This flurry of reports helped usher in a new educational reform movement known as the "excellence movement" (Bennett 1986).

As part of the excellence movement, many suggestions have been offered, but in general, excellence is equated at the operational level with higher standards within the general academic program--standards that include a more "classical" curriculum; longer school days, school weeks, and school years; and higher student achievement scores. At the same time, many of the reform reports also recommend greater access to quality education for minority students, for females, and for the handicapped. Unfortunately, they are generally silent with regard to the inherent conflict between raising standards and increasing access (Smith and Hester 1985). Also, they fail to take into account the fact that a unidimensional core of academic course

work will not serve the needs, interests, and abilities of all the students the schools are intended to serve (Cross 1984; Smith and Hester 1985). Likewise, they pay little attention to the need for adequate vocational preparation of the majority of the student population who never complete a college course of study. Tucker and Mandel (1986) have referred to this shortcoming as the Achilles' heel of the resurgence of interest in education.

Another shortcoming of the reform reports is their failure to deal in any detail with the changes in technology, the business world, and societal demographics, all of which will have significant impact on today's students as well as students over the next decade--the work force for the year 2000. Likewise, they neglect the needs of adults (both those who are currently in the workplace and those who will need to be reeducated and retrained (e.g., every 5-10 years) in order to meet the demands of the changing workplace (Finn 1986; Carnevale 1987). Cetron (1985) points out that our "public schools will be an important base for this learning" (p. 126). Finally, although many of the reports call for the preparation of workers who have "the ability to learn and to adapt to changes in the workplace" (Panel on Secondary School Education for the Changing Workplace 1984, p. xi), the strategies they suggest for attaining those ends appear to be based upon the misperception that such skills are a direct by-product of subject-matter teaching (Wasserman 1987). Furthermore, Kaplan (1985) contends that many of these strategies are not adequately grounded in the available research.