

PACE

POLICY ANALYSIS FOR CALIFORNIA EDUCATION

Policy Paper No. PP87-7-10

Vocational Education in Transition

**Michael W. Kirst
Gerald C. Hayward**

July 1987

Directors

**James W. Guthrie
University of California
Berkeley**

**Michael W. Kirst
Stanford University**

Additional copies of this paper, PP87-7-10, are available by sending \$3.00 per copy to:

**PACE
School of Education
University of California
Berkeley, California 94720**

**CHECKS PAYABLE TO THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
(California residents add appropriate sales tax.)**

***Policy Paper No. PP87-7-10
Policy Analysis for California Education (PACE)
Berkeley, California
July 1987***

Policy Paper No. PP87-7-10

Vocational Education in Transition

**Michael W. Kirst
Gerald C. Hayward**

July 1987

Michael W. Kirst is professor of education at Stanford University and co-director of PACE.

Gerald C. Hayward is a senior visiting lecturer in education at the University of California, Berkeley and director of the Sacramento PACE Center.

This paper was sponsored and published by Policy Analysis for California Education, PACE. PACE is funded by the William and Flora Hewlett Foundation and directed jointly by James W. Guthrie and Michael W. Kirst. The analyses and conclusions in this paper are those of the authors and are not necessarily endorsed by the Hewlett Foundation.

Additional copies of this paper, PP87-7-10, are available by sending \$3.00 per copy to:

**PACE
School of Education
University of California
Berkeley, California 94720**

**CHECKS PAYABLE TO THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
(California residents add appropriate sales tax.)**

***Policy Paper No. PP87-7-10
Policy Analysis for California Education (PACE)
Berkeley, California
July 1987***

Executive Summary

Vocational education in California is experiencing increasing criticism and significant enrollment declines. Between 1982-83 and 1984-85, for example, industrial arts enrollment dropped 16 percent and home economics enrollment declined 21 percent. While associating declines in these courses with the increased academic offerings and requirements for high school graduation and college entrance that occurred simultaneously bears further study, vocational education enrollment began decreasing shortly after Proposition 13 in 1978, long before new academic standards were imposed. This substantial erosion of vocational education electives may have a significant impact on noncollege-bound students and their high school completion rates.

In addition, attempts to evaluate the impact of high school vocational education are difficult because of lack of agreement on objectives and major data gaps. Questions continue about whether comprehensive high schools should provide skill training for entry-level jobs, or rather should stress academic skills required for a working life of continual learning, problem solving, and communicating. Vocational education also has been featured as a dropout prevention alternative, but its effectiveness is clouded by controversy and disputed data.

PACE has examined and reported on curricular changes in California comprehensive high schools since 1982-83. We believe a re-examination of this data is appropriate with a special focus on transitions occurring in vocational education. The future role of vocational education within comprehensive high schools is under greater reconsideration now than in recent years because of enrollment declines and changes in the U.S. job structure. Enrollment trends and partial studies described in this paper suggest that a major state-authorized review of vocational education is appropriate.

Contents

Executive Summary	iii
Policy Analysis for California Education	vii
Vocational Education in Transition.....	1
Curricular Change in California High Schools.....	1
Changes in Vocational Education, 1984-85 to 1985-86.....	5
<i>Rethinking Vocational Education</i>	6
List of Figures	
FIGURE 1: Graduation Requirements Established by SB 813 and Recommended by the State Board of Education, Admission Requirements CSU and UC	2
FIGURE 2: Percent Change in Number of Course Sections Offered, Adjusted for Changes in Enrollment, 1982-83 to 1984-85	3
FIGURE 3: Percent Change in Number of Course Sections Offered, Adjusted for Changes in Enrollment, 1984-85 to 1985-86	4
FIGURE 4: California Vocational Education, Federal Aid Under Public Law 98-524, 1986-87	8

Policy Analysis for California Education

Policy Analysis for California Education, PACE, is a university-based research center focusing on issues of state educational policy and practice. PACE is located in the Schools of Education at the University of California, Berkeley and Stanford University. It is funded by the William and Flora Hewlett Foundation and directed jointly by James W. Guthrie and Michael W. Kirst. PACE operates satellite centers in Sacramento and Southern California. These are directed by Gerald C. Hayward (Sacramento) and Allan R. Odden (University of Southern California).

PACE efforts center on five tasks: (1) collecting and distributing objective information about the conditions of education in California, (2) analyzing state educational policy issues and the policy environment, (3) evaluating school reforms and state educational practices, (4) providing technical support to policy makers, and (5) facilitating discussion of educational issues.

The PACE research agenda is developed in consultation with public officials and staff. In this way, PACE endeavors to address policy issues of immediate concern and to fill the short-term needs of decision makers for information and analysis.

PACE publications include Policy Papers, which report research findings; the Policy Forum, which presents views of notable individuals; and Update, an annotated list of all PACE papers completed and in progress.

Advisory Board

Mario Camara
Partner
Cox, Castle & Nicholson

Constance Carroll
President, Saddleback
Community College

Gerald Foster
Region Vice President
Pacific Bell

Robert Maynard
Editor and President
The Oakland Tribune

A. Alan Post
California Legislative Analyst,
Retired

Sharon Schuster
Executive Vice President
American Association of University Women

Eugene Webb
Professor, Graduate School of Business
Stanford University

Aaron Wildavsky
Professor of Political Science
University of California, Berkeley

Vocational Education in Transition

PACE has examined and reported on curricular changes in California comprehensive high schools since 1982-83. We believe a re-examination of this data is appropriate with a special focus on transitions occurring in vocational education. The future role of vocational education within comprehensive high schools is under greater reconsideration now than in recent years because of enrollment declines and changes in the U.S. job structure. Enrollment trends and partial studies described in this paper suggest that a major state-authorized review of vocational education is appropriate.

Curricular Change in California High Schools

Senate Bill 813 increased high school graduation requirements to: three years of English, two years of mathematics, two years of science, three years of social studies, and one year of foreign language or fine arts, in addition to the two years of physical education previously required. Those changes, plus model graduation requirements adopted by the State Board of Education and increased entrance requirements adopted by the trustees of the California State University (Figure 1), have created pressures on school districts to implement changes aimed at meeting state curricular standards. In 1985 PACE reported significant increases in numbers of class sections in social studies, music, English, art foreign language, mathematics, and science for the period 1982-83 to 1984-85 (Figure 2).

The year 1985-86 also found growth across the academic curriculum, suggesting that districts are still moving to meet the more rigorous standards. Comparing California Basic Educational Data System (CBEDS) information from 1984 with 1985, and correcting for enrollment growth, total classes in each departmental area (except music) display continued expansion in the number of classes offered. English (+0.6%), social science (+1.1%), and art (+1.4%) show modest growth; mathematics (+3.4%), and foreign languages (+4.7%) reveal moderate growth; drama (+13%) and science (+13.3%) display significant increases. Only music declined slightly by 0.4 percent, after correcting for enrollment increases (Figure 3).

In English, comprehensive English classes offered in grades 9 through 12 (+5.3%), literature (+2.2%), and advanced composition (+1.5%) displayed increases greater than English as a whole, continuing the changes begun in 1983-84. Advanced placement English declined slightly (-1.3%), which is not unexpected given its remarkable growth in the last two years.

FIGURE 1
Graduation Requirements Established by SB 813
and Recommended by the State Board of Education,
Admission Requirements CSU and UC

<u>Subject</u>	<u>SB 813</u>	<u>State Board of Education</u>	<u>CSU Required 1988</u>	<u>UC Required 1986</u>
English 4		3	4	4
Mathematics 3		2	3	3
Algebra		(1)		
Geometry		(1)		
Science 1d		2	2	1d
Physical Life	(1) (1)	(1) (1)		
Social Studies 1e		3	3	1e
World Civ.	(1)	(1)		
U.S. History	(1)	(1)	(1)	(1)
Ethics		(.5)		
American Gov.	(1) ^a		(1)	(1)
Economics		(.5)		
Foreign Language 2 ^c		1 ^b	2 ^c	2 ^c
Fine Arts		1 ^b	1	1 ^f
Computer Studies			.5	
Physical Education		2		
Electives 4				3

^aIncluding civics and economics

^bOne year foreign language or fine arts

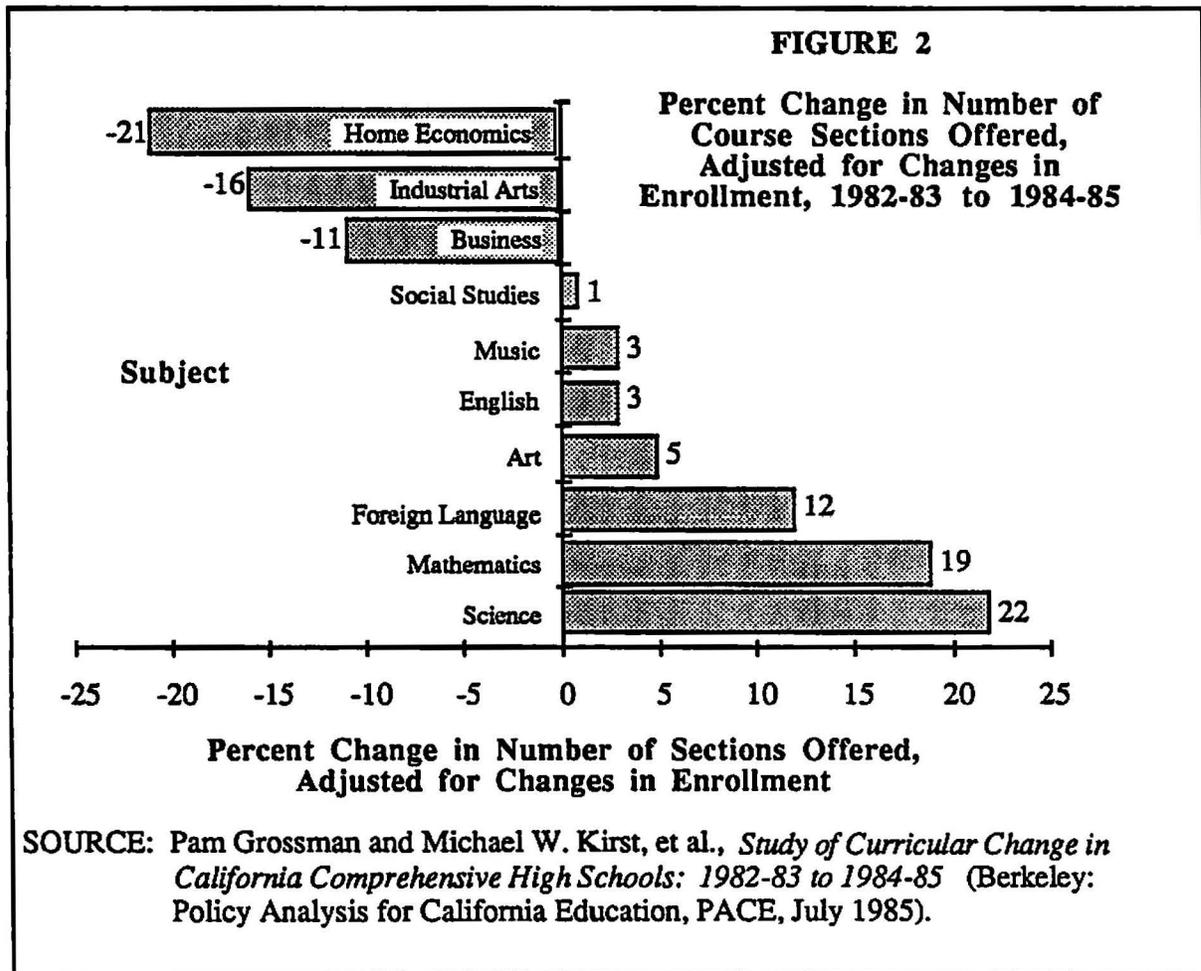
^cMust be in same language

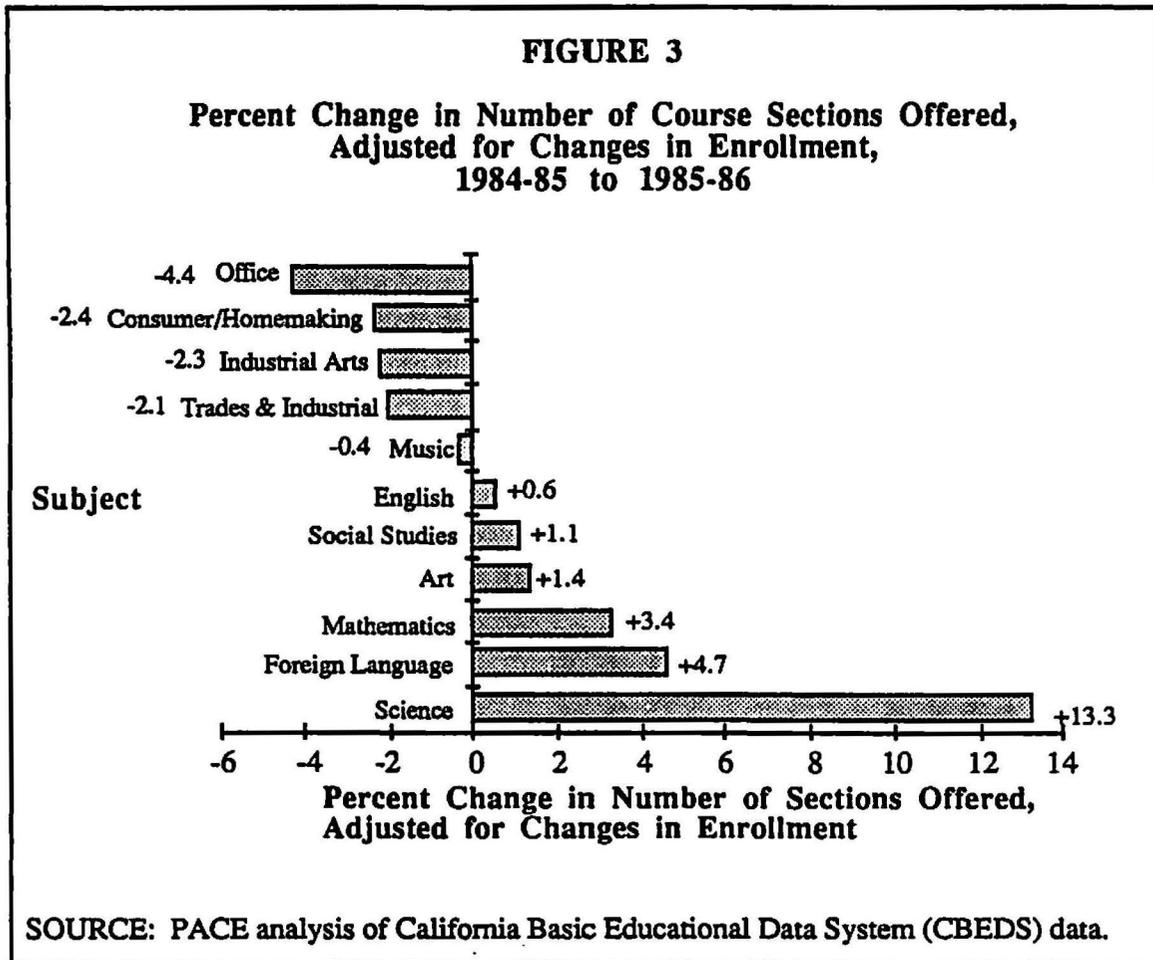
^dLab required

^eU.S. History/Government

^fVisual and performing arts

SOURCE: California Postsecondary Education Commission, and California State Department of Education.





The most significant finding in the category of foreign language is the huge growth rate in advanced (beyond the first two years) foreign language classes. These classes increased by 18.1 percent in a single year, with the largest increase occurring in Spanish (22.4%).

Science also had spectacular growth in chemistry (+20.6%), advanced chemistry (+17.9%), and the physical science, earth science, and life science courses (+29.5%), a clear response to increased graduation requirements.

In the social sciences, economics had the most dramatic growth (+24%), generated by Senate Bill 1213 which added a semester of economics to other graduation requirements. In mathematics, the largest increases occurred in courses beyond beginning algebra (i.e., geometry, trigonometry, and calculus). The combined rate of increase for all mathematics courses above beginning algebra totalled 10.7 percent. As was the case last year, courses relating to computers continued to demonstrate substantial increases. Computer literacy classes grew 25.8 percent. Other computer-related classes grew at a lesser, but still significant, rate of 13.4 percent.

These growth rates suggest little regarding the quality of the courses offered. They also do not generate information about whether promulgation of higher standards will increase dropout rates and enlarge the number of students failing to receive diplomas, nor do they answer the question about whether these growth rates will continue over time. However, they do suggest that district responses to increased graduation requirements, higher expectations, stricter standards, and more rigorous admission requirements have generated a substantial and continued movement toward a more academic curriculum.

Changes in Vocational Education, 1984-85 to 1985-86

Vocational education enrollment and course offerings continued a pattern of decline. Although the rate of decline between 1984-85 and 1985-86 subsided, it is still substantial and appears to permeate the vocational education curriculum. Comparing CBEDS data for 1984 with 1985 and correcting for enrollment growth, classes offered in seven of the ten programmatic areas which meet state requirements for vocational education showed declines. Only distributive education, health education, and technical education displayed increases, and these are three of the smaller program areas in the vocational education curriculum.

Office education, the largest of the program areas, declined by the greatest amount, 4.4 percent. Each of the next three largest program areas--industrial arts, trade and industrial, and consumer and homemaking education--declined somewhere between 2 and 2.5 percent (Figure 3).

Attempting to explain the continued decline in vocational education enrollment and classes offered is difficult. It is possible that schools deleted sections of these courses in order to offer more academic courses. It is also possible that teachers were shifted from vocational courses to other courses in which they were credentialed and in which the schools faced a shortage. An alternative explanation might be that sections declined because students had less room in their schedules for these traditionally elective courses as general education graduation requirements increased.

While associating vocational education class offering declines with increased academic requirements does bear further study, it does not account for the fact that vocational education enrollment began decreasing shortly after Proposition 13 in 1978, long before imposition of new academic standards. It may well be that the first round of declines occurred because of general reductions in classes occurring after Proposition 13, and that when dollars were restored by passage of Senate Bill 813 and subsequent budget bills, schools simply did not restore vocational courses, but instead focused on offering courses which would satisfy new graduation and higher education entrance requirements. In any event, substantial erosion of vocational education electives may have significant impact on noncollege-bound students and their high school completion rates. These enrollment trends suggest that a major state-authorized review of vocational education is appropriate.

Rethinking Vocational Education

Vocational education is a large and complex program in California that is experiencing increased criticism and significant enrollment declines. In 1983-84, 230,000 students were enrolled in vocational education courses in public comprehensive high schools at the 11th and 12th grade levels.¹ But an even larger number of 9th and 10th graders took courses termed vocational education but often considered exploratory because they do not lead to specific careers. These courses include typing, home economics, and industrial arts. Between 1982-83 and 1984-85, the latter two courses suffered enrollment declines of 16 percent in industrial arts and 21 percent in home economics.²

In addition to this comprehensive high school enrollment is a program that enrolls approximately 62,000 high school students and 30,000 adults in regional occupational centers and programs (ROC/Ps). There are 67 ROC/Ps in the state to provide specialized, intensive vocational education training that cannot be provided easily by a single high school. High school pupils are provided transportation between their schools and ROC/P

¹David Stern, E. Gareth Hochlander, Susan Choy, and Charles Benson, *One Million Hours A Day* (Berkeley, CA: Policy Analysis for California Education, PACE, 1986).

²Pam Grossman, Michael W. Kirst, Worku Negash, and Jackie Schmidt-Posner, *Curricular Change in California Comprehensive High Schools: 1982-83 to 1984-85* (Berkeley, CA: Policy Analysis for California Education, PACE, July 1985).

facilities. A PACE analysis estimates that one million hours per day are spent by 11th and 12th grade students in some type of vocational education program.³

With regard to depth or intensity of instruction, ROC/P programs provide considerably more than most comprehensive high school programs. However, ROC/P must convince many students to leave their schools voluntarily and travel to another school site for reasons such as special equipment or establishing contacts with prospective employers. Vocational education programs in comprehensive high schools increasingly face competition from the heavier academic demands required by new high school and college requirements. This trend once again evokes the question of whether comprehensive high schools should provide skill training for entry-level jobs, or should vocational education in comprehensive schools stress academic skills required for a working life of continual learning, problem solving, and communicating.⁴ The future role of vocational education within the comprehensive high school is under greater reconsideration now than in recent years because of enrollment decline and changes in the U.S. job structure.

Funding for vocational education is difficult to analyze because earmarked federal funds provide less than 10 percent of the total. The bulk of funding results from local decisions about allocating unrestricted state aid in terms of vocational or other subjects. The State Department of Education estimates that local school districts spend \$800 million from their unrestricted state grants on vocational education. Federal aid has become increasingly earmarked for special purposes such as disadvantaged and handicapped students, and guidance and program improvement. In 1986-87, federal funds will provide \$65,197,898 to California, but there is \$8,778,851 less for the on-going support of existing vocational education programs because of increases in federal set-aside provisions for the purposes mentioned above (Figure 4).

Regional occupational centers and programs received \$209 million in state categorical funds for 1986-87. Under federal law, California must prepare a state plan for vocational education, but the plan has little impact because the overwhelming amount of vocational education funds are locally determined. Vocational educators are devising courses that will help satisfy academic high school graduation requirements as well as provide vocational content. Some science requirements, for example, can be satisfied through a course with vocational emphasis, but such courses have not been prominently featured in the past. Indeed, a few educators are concerned that vocational courses are being crowded out of the curriculum because of lack of student time, given increased state, local, and postsecondary academic requirements. They also are concerned about the loss of support from large

³David Stern, et al., *One Million Hours A Day*.

⁴David Stern, et al., *One Million Hours A Day*.

FIGURE 4
California Vocational Education, Federal Aid
Under Public Law 98-524, 1986-87

Total Federal Grant
 \$65,197,898

Part I -
 \$ 4,563,853

Administration

Part II -
 \$34,561,406

Grants to local school districts

(includes set asides of \$13.3 million
 for disadvantaged and \$6.0 million for
 handicapped)

Part II -
 \$26,072,639

Program Improvement

(curriculum development, staff training,
 guidance, exemplary programs, etc.)

Part III -
 \$ 2,990,225

Consumer and Homemaking Education

Community Based Organizations

\$ 709,010

SOURCE: California Advisory Council on Vocational Education, Sacramento, 1986.

businesses that now contend that they want less specific vocational education and more general academic skills in their prospective employees.⁵

Attempts to evaluate the impact of high school vocational education are difficult because of lack of agreement on objectives and major data gaps. One standard is job placement after graduation, but a state study suggests that "the current definition of the replacement rate concept is too narrow and limited for determining all of the positive outcomes for students."⁶ Many students use vocational education for career exploration or improvement with no expectation of short-run job placement. Nevertheless, a PACE paper by Stern, Hochlander, Choy, and Benson concludes that:

Previous research has not found strong or consistent gains in employment or earnings for graduates of high school vocational programs. Gains appear to be greater for students who take a concentrated set of vocational courses in a particular area and then find employment in that area. However, gains from vocational training appear to diminish over time.⁷

Vocational education has also been featured as a dropout prevention alternative for many pupils, but once again its effectiveness is clouded by controversy and disputed data. Increasing the number of vocational education programs that are open to 9th and 10th graders deserves attention as a way to reduce dropouts. Most programs are not available until the 11th or 12th grades--a point when many students may be predisposed to drop out. All of these enrollment trends and partial studies suggest that a major state-authorized review of vocational education is appropriate.

⁵*Investing in Our Children* (New York: Committee for Economic Development, 1985).

⁶Carvel Education Management Planning, *Placement Rate Concept* (Sacramento, CA: Carvel, 1984).

⁷David Stern, et al., *One Million Hours a Day*, 11.