PACE

POLICY ANALYSIS FOR CALIFORNIA EDUCATION

Policy Paper No. PP 85-7-4

CURRICULAR CHANGE IN CALIFORNIA COMPREHENSIVE HIGH SCHOOLS: 1982-83 to 1984-85

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POLICY ANALYSIS FOR CALIFORNIA EDUCATION

Policy Analysis for California Education, PACE, is a university-based research center focusing on issues of state education policy and practice. PACE is located in the Schools of Education at the University of California, Berkeley and Stanford Universtiy. It is funded by the William and Flora Hewlett Foundation and directed jointly by James W. Guthrie and Michael W. Kirst.

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INTRODUCTION

This study investigates curricular changes in California comprehensive high schools from 1982-83 to 1984-85. During this period a number of educational reforms occurred, all aimed at bolstering the academic demands of secondary schools. Senate Bill 813 mandated more extensive statewide graduation requirements for high schools, while California State Universities and the University of California altered their entrance requirements. In addition, a number of national reports found America's high schools lacking in academic rigor (Boyer, 1983; National Commission on Excellence in Education, 1983).

Although it is difficult to ascertain the precise causes of change, this study does find changes in the course offerings of a sample of 20 California comprehensive high schools. In almost all cases, our data mirrors statewide curricular changes documented in California Basic Education Data System (CBEDS) data. The general pattern in both sets of data involves increased offerings in academic areas, particularly in math, science, and advanced placement, and decreased offerings in industrial arts, home economics, and business education.

MAJOR FINDINGS AND POLICY IMPLICATIONS

Major Findings

One of the most apparent curricular changes in our sample schools is the rise in offerings of advanced placement (A.P.) courses. Advanced placement shows the greatest percentage increase over the three year period, jumping 34%. (When one school which added 28 A.P. courses in one year is also included, the percentage increase rises to 58%.) The average increase across the 20 schools, after adjusting for enrollment changes, is 117%. While the small base of A.P. courses makes this increase especially dramatic, it is nonetheless an important indicator of the move to a more academic curriculum.

The biggest departmental changes occurred in the areas of math and science. Even after adjusting for enrollment changes in the schools, the number of sections offered in science increased 22% from 1982-83 to 1984-85, with the biggest increases occurring in physical science. This is not surprising in light of the SB 813 graduation requirement for one year of physical science. (See Table 1 for curricular changes with adjustment for enrollment shifts.) Similarly, the adjusted increase in math is 19%, with the biggest increases occurring in computer science. Although all areas of math show increases, the more advanced math courses, such as calculus, analytic geometry, trigonometry, and geometry, show the biggest gains. Calculus and analytic geometry courses, for example, increased by 33% while general math courses increased by 11%.

The increase in math and science offerings is accompanied by a substantial decrease in offerings in home economics and industrial arts. After adjusting for enrollment changes, the number of sections of home economics dropped 21%. Industrial arts offerings dropped 16%. Only one school eliminated home economics altogether, but almost all of the schools in our sample show decreases in the number of sections offered in this department. Industrial arts shows a similar pattern, with 15 of the 20 schools showing declines in the number of industrial arts sections offered.

Both foreign language and business education exhibit moderate changes. The number of sections offered in foreign language increased 12% after adjusting for enrollment

changes. The number of sections of business education dropped 11%. Seventeen of 20 schools show increases in foreign language sections. Fifteen schools display decreases in business education.

Subject areas that remained relatively stable include English, social studies, music, and art. Although all of these areas show very small increases in the number of sections offered (5% or less), some of the departments have undergone internal changes. An analysis of English offerings demonstrates a substantial increase in comprehensive English courses, advanced classes, and American and British literature classes. At the same time, elective courses, such as journalism, reading, writing, and others declined. Social studies also shows internal change, with a substantial increase in the number of world history courses and a decline in social science courses such as psychology and anthropology. Although offerings in music and art increased moderately in our sample schools, our data are not consistent in these areas with CBEDS data which show declines in both music and art.

All of these changes show a general pattern of increases in the more traditionally academic offerings and decreases in the areas associated more with vocational education and practical arts. In order to see if this pattern varied according to the type of school, we separated our sample into two categories: those with parent education above our sample mean and those with parent education below our sample mean, using the amount of parent education reported in California Assessment Program (CAP) data as an indicator of socio-economic status (SES). California State Department of Education officials report that the Parent Education Index correlates highly with both SES and pupil achievement. In this analysis, we found that schools that fell below our mean for parent education show substantially higher increases in math and science sections than schools falling above the mean for parent education. For example, schools below the mean show an adjusted increase in math sections of 28%, while schools above it show an 8% increase. Similarly, schools below the mean show a 32% increase in science sections, while schools above the mean exhibit a 10% increase in science sections. The differences between the two categories of schools are most pronounced in the academic areas.

This preliminary analysis seems to indicate that the schools with lower parent education, and possibly lower SES schools, are demonstrating the greatest increases in academic offerings. Schools in both categories display roughly equivalent losses in industrial arts (18% and 20% for schools below and above the mean respectively), and increases in foreign languages (12% and 11%). However, schools with a Parent Education Index below the mean show greater losses in home economics, with a 30% adjusted decrease in the number of sections offered, compared with an overall 10% adjusted decrease for schools above the mean in parent education. These figures suggest that as the schools with lower parent education work to increase their offerings in academic areas, they may also reduce their offerings in areas such as home economics. It is noteworthy that the trends in course offerings reported above are evident without regard to pupil ethnicity or geographic location in California.

Policy Implications

The general pattern in these 20 schools, a pattern supported by CBEDS data, indicates that curricular changes occurring in California comprehensive high schools are consistent with the objectives of recent reform efforts. We used CBEDS data from the to supplement our findings from the sample schools. CBEDS collects data on both curriculum and enrollments for all California public schools.

TABLE 1

Overview of California Comprehensive High School Curricular Changes: Percent Change in Number of Sections Offered, 1982-83 to 1984-85

(Percentages reported have been adjusted for enrollment changes)
n = 20 High School

School	Adv Pl	Science	Math	Fr. Lang	HomeEc	Ind Art	Bus Ed	Art	Music	English	Soc. Studies
A	-12%	-19%	-5%	3%	-54%	13%	-19%	-9%	-25%	-19%	0%
B	0%	16%	27%	18%	4%	6%	2%	19%	-35%	0%	2%
C	85%	18%	-2%	-9%	-18%	-37%	-18%	1%	-9%	-16%	-8%
D	0%	37%	16%	-5%	-34%	-16%	0%	-40%	-6%	9%	2%
E	4%	22%	5%	15%	-51%	-17%	-19%	-6%	-4%	11%	15%
F	0%	44%	76%	3%	37%	-21%	3%	37%	105%	54%	-8%
G	1100%	26%	19%	29%	-20%	-8%	-8%	22%	-17%	17%	9%
H	-2%	48%	48%	4%	-67%	-27%	-25%	-16%	-34%	-8%	-14%
I	20%	0%	2%	1%	-40%	-64%	-28%	-20%	-47%	-13%	-11%
J	22%	34%	10%	30%	-7%	4%	-18%	-27%	13%	8%	5%
K	288%	0%	43%	10%	-3%	-5%	23%	-3%	70%	31%	49%
L	44%	-16%	-16%	-10%	-24%	-24%	-3%	-35%	-33%	-29%	-13%
M	11%	13%	18%	11%	48%	0%	-29%	48%	25%	25%	21%
N	0%	38%	4%	23%	-69%	-21%	-8%	84%	-8%	-29%	-8%
O	300%	59%	-2%	10%	-3%	24%	-19%	2%	118%	-23%	-18%
P	42%	40%	55%	20%	-12%	-17%	21%	29%	32%	23%	14%
Q	400%	65%	65%	35%	-37%	-4%	-4%	18%	-35%	16%	3%
R	0%	-2%	11%	9%	-100%	-20%	-27%	-8%	-29%	-5%	-8%
S	17%	19%	8%	24%	82%	-47%	-21%	-19%	-16%	1%	1%
T	17%	0%	-1%	18%	-53%	-30%	-18%	16%	-15%	-12%	-11%
AVERAGES:											
	117%	22%	19%	12%	-21%	-16%	-11%	5%	3%	2%	1%

Our data display a trend toward increasing academic offerings, particularly at advanced levels, as indicated by findings in A.P., math, and science. Some of the changes, such as increases in physical science and world history, would seem to be the results of the recent statewide graduation requirements. The increase in A.P. courses may be a result of changes in the University of California admissions policies, which weight A.P. courses.

The decline in home economics, industrial arts, and business education are more difficult to explain. It is possible that schools deleted sections of these courses in order to offer more of the academic courses. An alternative explanation might be that sections declined because students had less room in their schedules for these traditionally elective courses as graduation requirements increased. A recent nationwide survey of 181 vocational educators supports this interpretation (Hooper, 1985). The study found that 80% of the 191 high school vocational educators surveyed reported that students had less time for vocational education as academic requirements increased. Two-thirds of the teachers reported declining enrollments in vocational courses. In California, however, vocational enrollments began decreasing after Proposition 13 in 1978 (Catterall and Brizendine, 1985).

Although it is possible to speculate on reasons for change, we do not have conclusive evidence to support any causal statements. As in most cases of curricular change, there are multiple causes at both the local and state level. For whatever reasons, it appears that changes are occurring in the general direction desired by reformers: toward an emphasis on traditional academic subjects. As we have data only on course titles, not on course content, we cannot comment on any substantive change in actual classroom instruction. Although it is not clear what the move to a more academic curriculum will mean for these schools, a recent study on "Determinants of Achievement Gain in High School" (Rock, Ekstrom, Goertz, Pollack, 1985) suggests that the academic emphasis of a school *is* related to higher gains on achievement tests.

The curricular changes demonstrated in our study pose a number of implications for both schools and policymakers. The first implication concerns students' curricular choices. Our data show an increase in the academic offerings available to more advanced students and an erosion of non-academic electives available for general track students. As a recent study of curricular change in six schools over the past 25 years suggests (Walker, et al., in press), change is most likely to benefit students at either end of the spectrum. An important question concerns the effect of these changes on students in the general track or students who are unlikely to take advanced academic courses. This is a particularly important concern given the recent PATHS study (Sanders and Stone, 1984) which demonstrated that students in the general track receive the least curricular guidance and take programs of study with the least coherence. What will the erosion of electives in home economics, business education, and industrial arts mean for non-college bound students? Will the increase in academic requirements for these students improve their achievement on standardized tests? The PATHS study also suggests the importance of looking beyond course titles in order to understand the curriculum students receive. We did not probe this issue in our study.

A second implication arises from the increase in math and science sections. Ironically, this desired increase in math and science offerings comes at a time of serious teacher shortage in these areas (Guthrie and Zusman, 1982; Institute for School Development, 1982; Rumberger, 1984). Given this shortage, it is important to ask: who is teaching these new sections of math and science? As many of the increases have occurred at more advanced levels, for example, in calculus and advanced placement, it becomes even more important to ensure that teachers teaching these courses have sufficient background in and knowledge of their subjects.

DESCRIPTION OF SAMPLE AND METHODOLOGY

Sample

The sample for this study includes 20 public comprehensive high schools in California. It is not a random sample. Instead, it was purposely constructed based upon several factors. Sixteen of the high schools are also part of the sample used in the PATHS study, and the remaining four are participants in the Study of Stanford and the Schools. (We selected schools from these earlier projects in order to provide for the possibility of comparing our data with that collected previously.)

Table 2 presents demographic data on our sample drawn from the bank of data collected as part of the California Assessment Program (CAP). Comparison of sample means with state means shows that our sample is higher on percent Asian enrollment and on percent Black enrollment. We purposely included in our sample an all-Black high school and several schools with high Asian enrollments. Though the sample mean for percent Hispanic enrollment is slightly below the state mean on that variable, there are two schools in our sample with significant Hispanic enrollments.

The mean size of the sample schools is higher than that of the state because we included seven large high schools (enrollment over 2000); however, the sample also includes two small high schools. Urban, rural, and suburban schools all are represented in the sample, and, while a majority of the schools are located in the northern part of the state, there are schools from Los Angeles, San Diego, and central valley areas.

The mean Parent Education Index for our sample is slightly above that for high schools in the state as a whole. California Assessment Program scores are also slightly above the mean for the state. This probably indicates that our sample is skewed slightly in the direction of more academically-oriented schools where perhaps a greater percentage of students are preparing for college. This might account for some of the different levels of curricular change in our sample as compared with the state.

Methodology

In the Fall of 1984, all schools in the sample were contacted and asked to send copies of course descriptions and master schedules for the academic years 1982-83 and 1984-85. We conducted extensive telephone and personal follow-ups with the schools which resulted in the collection of complete data from all the schools. Master schedules are detailed documents which list the actual assignment of individual teachers, period by period, to specific courses for each semester. The data analyzed in this study are thus not impressions of teachers or administrators, rather they represent actual sections of courses taught. We believe that this data has been compiled with high reliability.

Using the master schedules, we tabulated the number of sections of each separate course taught in 1982-83 and 1984-85 for all departments in the schools, with the exceptions of physical education, special education, English as a second language, vocational courses offered as part of the Regional Occupational Program, and miscellaneous offerings such as office assistant.

In order to control for enrollment changes in the schools from 1982-1983 to 1984-1985, we adjusted the number of sections offered at each school to reflect the school's enrollment. For each department within a school, we divided the number of sections by the

TABLE 2

Demographic Data on Sample Schools

School	1982-83 % Asian	1982-83 % Black	1982-83 % Hispanic	1982-83 % White	1983-84 Enroll	1983-84 PEI*	CAP Scores: Percent Correct 1983-84 Math	1983-84 Reading	1983-84 Writing
A	12.72	2.28	8.61	76.39	1536	3.54	72.9	67.0	68.1
B	3.12	18.89	18.61	59.38	2493	3.19	65.9	59.8	60.6
C	2.55	2.77	5.17	89.51	1530	3.62	73.4	68.5	68.8
D	0.29	98.59	0.53	.59	1401	2.67	54.1	55.5	56.6
E	68.00	19.14	2.45	10.41	2232	2.18	63.8	47.5	49.4
F	0.00	0.00	4.00	96.00	148	2.47	66.3	57.8	53.9
G	9.34	10.92	6.91	72.83	2686	3.53	73.6	66.6	66.5
H	4.94	27.21	13.63	54.22	2041	2.71	59.3	56.4	56.0
I	5.45	1.64	58.3	34.61	1331	2.65	61.5	56.8	56.0
J	9.49	3.34	8.34	78.83	1768	3.89	73.3	67.8	67.6
K	0.79	4.70	42.85	51.66	2427	2.50	62.0	55.7	57.1
L	5.09	22.8	6.52	65.59	1787	4.05	76.4	75.4	76.7
M	5.76	5.35	1.71	87.18	1772	4.34	82.1	73.7	75.3
N	0.28	0.00	5.57	94.15	377	3.05	68.3	69.0	64.3
O	19.6	2.99	59.07	18.34	1178	1.94	54.3	47.4	45.6
P	3.94	7.72	33.01	55.33	2418	2.71	64.9	61.1	59.0
Q	8.57	1.94	16.17	73.32	1587	2.95	70.3	62.9	68.1
R	0.71	4.89	12.1	82.30	1233	3.59	70.3	68.1	66.4
S	3.39	0.33	4.21	92.07	1640	3.72	75.9	69.5	68.6
T	44.67	22.57	11.33	21.43	2881	2.57	68.4	56.0	58.6
MEAN	10.44	12.90	15.95	60.71	1723	3.09	67.85	62.13	62.16
Standard Deviation	16.43	21.42	17.50	29.53	685	0.64	7.16	7.76	7.98

*PEI = Parent Education Index

total school enrollment, and then multiplied by 1000. We used these adjusted figures to compute the percent change in the number of sections offered. Table 1 summarizes these results.

In addition to examining the overall change in the number of sections offered, we conducted more detailed analyses of changes in offerings within departments. We could find no standard categories for classifying courses within subjects and so developed categories which seemed to make sense in illuminating curricular changes in individual departments. These breakdowns--which are very close to those used in CBEDS data--are reflected in the subject area analyses which appear later in this report.

As a means of triangulating our findings, we used CBEDS data on total number of sections offered, and student enrollment in, courses statewide. (Note: The CBEDS data base includes all high school programs in the state, including continuation high schools and Regional Occupational programs as well as comprehensive high schools. Our sample includes only comprehensive high schools.) Included in this report are data on statewide changes in various subject area offerings compared with the results of our investigation of sample schools. To ensure that the overall changes are not simply an artifact of enrollment changes, we compared the total enrollments for both our sample and California as a whole (Table 3).

Table 3

High School Enrollment Changes in California and Study Sample: 1982-83 to 1984-85

	1982-83	1984-85	% Change
Study sample	34,540	34,902	+1%
California	1,263,668	1,305,148	+3%

Finally, we were interested in whether type and level of curricular changes would be related to socio-economic status of schools. As a proxy measure for SES we used the Parent Education Index (PEI) from CAP data. Schools in our sample were split into two groups: those with mean PEI values above the sample mean and those with mean PEI values below the sample mean. Changes in number of sections for the two sub-samples were recomputed and resulted in some interesting differences. The results of this analysis are presented in Appendix C. We stress that this analysis of sub-samples based on PEI is exploratory in nature at this point; we expect to expand on this in future work. Nonetheless, our preliminary outcomes may raise policy issues worth discussion.

SUBJECT BY SUBJECT ANALYSIS

This study collected and analyzed data related to curricular changes in 20 California comprehensive high schools between the 1982-83 and 1984-85 school years. For our departmental analyses, each department was subdivided into several categories and the sections tallied according to the categories. In coding courses, an attempt was made to

combine courses related to each other. For example, courses with titles like remedial math, math review, consumer math, and the like were coded under general math.

Changes in each department are displayed by a table that shows the general categories, the number of sections in each category for 1982-83 and 1984-85, and the percentage changes from 1982-83 to 1984-85. Since the figures in these tables are not adjusted for enrollment, there may be discrepancies between the raw percentage changes reflected here and corresponding percentage changes in other tables. The percentage changes are given either in (+) sign to indicate an increase, or in (-) sign to indicate a decrease. The overall departmental change is shown by the last row of figures (total).

Following the table is an analysis. Each analysis is designed to fully describe the table and give interpretation of the figures.

In order to triangulate our findings, we included enrollment and section data from the California Basic Education Data System (CBEDS). CBEDS, developed by the California State Department of Education, is part of a larger multipurpose data system that collects information on staff, enrollment, curriculum, finance, facilities, and community demography related to public elementary and secondary schools. To make the comparison systematic, we collapsed CBEDS courses according to our course categories.

Curricular Changes in Advanced Placement: 1982-83 to 1984-85

Number of Sections

Category	1982-83	1984-85	% Change
English	28	33	+ 18%
U.S. History	28	44	+ 57%
Calculus	22	24	+ 9%
Biology	14	20	+ 43%
Chemistry	12	14	+ 17%
Physics	7	14	+100%
European History	2	10	+400%
(Courses not offered in 1982-83)			
Computer Science	0	6	
Foreign Language	0	10	
Art History	0	2	
Harmony	0	2	
TOTAL	113	179	+ 58%
Total Without Outlier	113	151	+ 34%

Analysis

Our analysis focuses primarily on the changes in advanced placement courses that already existed in the curricula of our sample schools as of 1982-83. There is a substantial increase in the number of sections offered in A.P. courses over the three year period.

The biggest increases came in A.P. U.S. history, A.P. biology, A.P. physics, and A.P. European history. Advanced placement courses that were most likely to be offered include English, U.S. history, calculus, and biology. Schools that already offered these courses in 1982-83 were more likely to add A.P. science courses, such as chemistry and physics, and A.P. computer science. Overall the number of sections of A.P. courses rose 58%. One of the schools, however, represents an outlier, as it went from no A.P. course in 1982-83 to 28 in 1984-85. Without the outlier, A.P. courses rose 34%.

CBEDS data does not single out A.P. courses except for A.P. English. CBEDS showed an 80% increase in the number of sections of A.P. English offered and a 72% enrollment increase in A.P. English.

Curricular Changes in Science: 1982-83 to 1984-85

Number of Sections

Category	1982-83	1984-85	%Change
Life/General	273	325	+ 19%
Biology	412	432	+ 5%
Physical/Earth	64	173	+170%
Advanced	366	413	+ 13%
Electives	58	56	- 4%
TOTAL	1173	1397	+ 19%

Analysis

There is a large overall increase in the number of science sections offered. Most noticeable is the dramatic increase in the number of physical science sections available. In 1982-83 only 10 of the schools offered a course with the title of physical or earth science. By 1984-85, 15 schools did so. This analysis shows that there is a healthy increase in the number of sections offered at both the general/beginning levels (life/general science) as well as at advanced levels. The only decrease is in sections of electives offered--in courses such as conservation, aerospace education, astronomy, and oceanography. It is likely that students and teachers involved in these courses have now shifted into physical or earth science courses.

Changes in this sample were in the same direction as those in CBEDS, though there are differences in degree of change. Based on CBEDS data, the overall increase in number of sections of science offered in California over the period of this study is 27%, while the schools in this sample show an increase of 19%. Given the demographics of the sample this is not necessarily surprising. The sample mean for CAP scores and Parent Education Index suggest that our sample is skewed somewhat in the direction of more academically-oriented course offerings. Thus, the sample schools probably came closer to providing enough science courses to meet new state requirements than the state as a whole, and so had less need to increase offerings.

The major policy issue raised by this marked increase in science offerings concerns the reported shortage of qualified science teachers. One study documents the fact that a large number of teachers of science and math are not certified in these subjects (Rumberger, 1984). It seems clear from our data that more students are enrolling in science classses now than was the case two years ago. What is less clear is what kind of science education they are receiving from inadequately prepared instructors, and which students are most affected--students in the general, "non-college prep" courses, students at the advanced levels, or those in between.

Curricular Changes in Math: 1982-83 to 1984-85

Number of Sections

Category	1982-83	1984-85	% Change
General Math	519	576	+ 11%
Algebra	617	694	+ 11%
Trig/Geometry	303	362	+ 20%
Computer Science	67	128	+ 91%
Analytical Geometry/ Calculus	54	72	+ 33%
TOTAL	1560	1832	+ 17%
Total Without Computer Science	1493	1704	+ 14%

Analysis

Math sections increased more than 10% in every category. The least percentage increase is shown in general math and algebra at 11% each. Computer science gained a substantial increase of 91%, almost doubling in size. Even though algebra may have one of the lesser percentage increases, it should be noted that in fact, it has the largest absolute section increase. Algebra increased by 77 sections, by far the largest section increase, followed by a 61 section increase in computer science. The percentage increase in algebra is relatively low due to its large base. Notice that there were 617 algebra sections in 1982-83 as opposed to only 67 in computer science, for instance.

Math departments, on average, increased by 17%. Even if we consider computer science a special case and pulled it out, the average change is still an increase of 14%. The large percentage increases are shown in junior and senior college preparatory courses such as trigonometry/geometry and analytic geometry/calculus.

CBEDS figures also indicate corresponding percentage increases in the number of students enrolled in each course as well as in the number of course sections offered in schools over the same period. According to CBEDS data, enrollment increased by 7%, while the sections grew by 10%.

Curricular Changes in Foreign Languages: 1982-83 to 1984-85

Number of Sections

Category	1982-83	1984-85	% Change
French	211	226	+ 7%
Spanish	450	527	+ 17%
German	63	81	+ 28%
Chinese	18	16	- 11%
Japanese	1	13	+ 18%
Latin	23	34	+ 48%
Other	22	10	- 55%
TOTAL	798	907	+ 14%

Analysis

The number of sections of foreign languages increased by 14%. The larger increases are found in German (+28%) and Latin (+48%). Our sample findings are similar to CBEDS data which show increases in sections of French (+14%), Spanish (+20%), German (+13%), and Latin (+22%). Latin seems to be making a limited comeback in California comprehensive high schools.

Curricular Changes in Home Economics: 1982-83 to 1984-85

Number of Sections

Category	1982-83	1984-85	% Change
Foods	126	83	- 34
Clothing	76	54	- 29
Life Skills	40	26	- 35
Parent Education	51	57	+ 12
(Without Outlier)	41	34	- 17
Other	64	55	- 14
TOTAL	357	275	- 23

Analysis

There is a substantial decrease in the number of home economics sections offered in our sample schools. All areas, except for parent education courses, show decreases in the number of sections available. In some cases, courses were entirely eliminated; in other cases, courses were collapsed, so that, for example, Foods 1, 2, 3 were offered in one class. Home economics courses demonstrated the greatest decline of the departments studied.

Our data is consistent with CBEDS data on trends in home economics offerings. CBEDS shows a 5% decline in sections of food and nutrition courses, a 24% decline in sections of clothing courses, a 17% decline in sections of family courses, and an increase of 19% in child development courses (which we included under parent education in our sample). Overall, there is a 12% decline in the number of home economics sections offered in 1984-85, and a 14% decline in enrollment in home economics courses, according to CBEDS data.

Curricular Changes in Industrial Arts: 1982-83 to 1984-85

Number of Sections

Category	1982-83	1984-85	% Change
Auto	154	135	- 12
Metal	85	77	- 9
Wood	183	135	- 26
Drafting	160	146	- 9
Graphic Arts	28	23	- 18
Electronics	64	60	- 6
Other	80	58	- 28
TOTAL	754	635	- 16

Analysis

There is a clear decrease in sections of industrial arts. The overall change in these schools (-16%) closely mirrors the change in CBEDS sections (-14%), though there are some differences according to subject area.

In this sample, wood courses show the sharpest decrease, while in CBEDS sections statewide, metals courses decreased the most (-23%). The only subject area which seems to be remaining fairly stable is electronics. Though there appear to be across-the-board reductions in the number of sections of industrial arts courses, it is possible that some of this course material is being covered/offered in other places, such as Regional Occupational programs. Nonetheless, the reduction in sections offered as part of the core high school curriculum will likely result in a narrower range of students being exposed to these subjects.

Curricular Changes in Business Education: 1982-83 to 1984-85

Number of Sections

Category	1982-83	1984-85	% Change
Typing	325	303	- 4
Accounting	153	130	- 15
Shorthand	41	31	- 24
Office Work	183	150	- 18
Business Law	65	53	- 19
TOTAL	757	667	- 12

Analysis

The number of business education sections decreased in every category, although in varying degrees. The highest percentage drop (-24%) occurred in shorthand. Typing seems to be the only course that came close to maintaining its number of sections with only a 4% drop. This may be attributed to the fact that typing is a popular business course for both college-bound and non-college-bound students.

Overall, sections in the business education department decreased 12%. Changes between the department categories are not sharply differentiated for the most part, except for the typing course which has the least decrease. The overriding pattern is a decrease in every category.

CBEDS figures show even more drastic decreases in enrollment and course sections. According to CBEDS data, enrollment dropped 42% and the sections decreased by 30%. Both this study and CBEDS data show uniform decreases in business education. The discrepancy in magnitude may be due to the fact that this study includes only comprehensive high schools, while CBEDS data includes Regional Occupational programs as well.

Curricular Changes in Art: 1982-83 to 1984-85

Number of Sections

Category	1982-83	1984-85	% Change
Art/Design	161	193	+20
Ceramics/Crafts/ Jewelery	112	94	-16
Drawing/Painting	62	65	+ 5
Other	81	81	0
TOTAL	416	433	+ 4

Analysis

The table above reflects mixed results in art departments. A decrease is shown in the ceramics/crafts/jewelry category. The remaining two categories indicate small-to-noticeable percentage increases. Minimal increase is seen in drawing/painting courses. On the other hand, art/design courses increased noticably by 20%. Even though inconsistency is seen within the department with respect to the direction of change, no major change is reflected in art departments overall. The average percentage increase in the number of sections offered is only 4%.

Curricular Changes in Music: 1982-83 to 1984-85

Number of Sections

Category	1982-83	1984-85	% Change
Performing Instrumental	135	135	0
Instrument Lessons (Indiv.)	36	31	- 14
Performing Vocal	86	75	- 13
Music Theory/ History	21	21	0
Other	21	22	+ 4
TOTAL	301	284	- 6

Analysis

The changes in music are somewhat difficult to interpret. CBEDS data indicate a clear drop in number of sections (down 19%); here this is less marked (down 6%). In CBEDS data the drop is largest in the category of "Performing Instrumental" (-31%) which includes band and orchestra. It is likely that in some schools these courses have become part of the extracurricular program, rather than part of the course offerings. Within our sample, the greatest decreases appeared in individual lessons (mostly guitar and piano) and in vocal performing groups. It is possible that some of these are offered as extracurricular activities. It is notable that the largest increase in sections according to CBEDS figures is in music theory/history courses (+12%)--the most academic of the offerings in music.

One question unanswered by data on sections alone has to do with the number of students enrolled in various music courses such as performing groups. Most schools continue to have a program which includes one or two instrumental and vocal performing groups. As academic requirements increase, participation of students in these music courses may decrease, which may affect the music program in schools over the long run as it becomes more difficult to recruit enough talented musicians to constitiute a viable performing group.

According to CBEDS data on both sections of music offered and enrollment in courses, the total number of sections of music declined only 19% but the number of students enrolled declined 52%.

Curricular Changes in English: 1982-83 to 1984-85

Number of Sections

Category	1982-83	1984-85	% Change
Drama	38	35	- 8
Reading	143	96	- 33
American/British Literature	132	153	+16
Comprehensive	866	1045	+21
Electives	236	179	- 24
Advanced Courses	89	102	+15
Journalism	49	38	-24
Writing	208	168	-19
Other	690	724	+ 5
TOTAL	2451	2450	+ 4

Analysis

Although the number of English sections offered in our 20 sample schools remained relatively stable, the nature of the English curriculum in these schools seems to be changing. More schools are moving away from elective offerings and toward comprehensive, year-long courses. This is particularly apparent in the junior and senior years, where upper division courses such as English 11 have been added to the curriculum. There is also a concurrent reduction in the number of electives offered in the schools, although no school did away with electives entirely.

Our data are consistent with CBEDS data on changes in the types of English courses offered. CBEDS data show a 22% increase in sections of comprehensive English courses, a 40% increase in American and British literature sections, drops of 5% in sections of reading and composition, and a 7% drop in sections of journalism. Overall, CBEDS data show a 3% increase in the number of English sections offered but a 5% drop in enrollment in English classes. While overall enrollment in English classes fell slightly, enrollment in A.P. English classes rose 72%.

The trend in English among our sample schools is toward more comprehensive and advanced courses, including more traditionally academic electives such as American literature, and away from other electives, including skills-based electives such as reading and writing. English offerings deserve further study in the future as the new California State University requirement for four years of English is fully implemented.

Curricular Changes in Social Studies: 1982-83 to 1984-85

Number of Sections

Category *	1982-83	1984-85	% Change
U.S. History	581	556	- 4%
World History	325	422	+ 30%
Social Sciences	438	376	- 14%
Government	297	282	- 5%
TOTAL	1,641	1,636	-0.03%

Analysis

The results in social studies indicate that while essentially no change occurred overall, there are varied degrees and directions of movement within departments. Little change is shown in U.S. history courses (-4%). Social science courses declined noticeably (-14%). The only gain between categories appears in world history. Not only was the gain in world history the only one, but it was also substantial, with a 30% increase. Government courses showed a 5% decrease.

The state legislature is debating whether all California high school students should take economics. In that regard, our study shows that even though the social sciences declined as a category, the economics course sections increased 67%. CBEDS also shows a 39% increase in enrollment in economics courses.

As indicated in the totals, the department maintained its overall number of sections with a negligible decline of less than 1%. These results are also consistent with data provided by CBEDS which indicate the number of sections declining by only 1%. According to CBEDS data, enrollment in social studies courses declined 6%.

*The categories include course titles as follows. U.S. history: American history, California history, American culture. World history: world cultures, western civilization, current affairs, world studies. Social sciences: economics, law, anthropology, psychology, sociology, geography, political science, minority studies, philosophy. Government: civics, foreign policy, American government, student government.

REVIEW OF RELATED LITERATURE

The findings of our study are generally consistent with the findings of other studies of recent curricular changes in high schools, particularly with regard to the nature of the changes in academic offerings. However, other surveys report few planned reductions in vocational and elective courses, in contrast to our findings of reductions in offerings in industrial arts and home economics. Although other studies have asked about the causes of curricular change, there is little agreement about the primary reasons for change.

Several recent surveys investigated school districts' plans for curricular change. A survey conducted by the American School Board Journal and Virginia Tech of 1,027 school board members found that more than 40% of school board members reported increasing the credits in math, science, computer technology, and English required for high school graduation. Board members also reported curtailing course offerings in music, art, driver education, and industrial arts (Underwood, Fortune, Cleary, 1985). Athough this is a nationwide survey of graduation requirements rather than of specific curricular changes, it demonstrates a similar pattern to our study, a pattern of increases in sections offered in academic areas, particularly in math, science, and computer courses, and reductions in sections offered in industrial arts and other electives.

A recent survey of 82% of the high school districts in California, sponsored by the State Board of Education, found that 84% of school districts planned to meet the SB 813 graduation requirements for the graduating class of 1985 and 90% of the districts planned to meet the new requirements for the class of 1988. The survey reported that only a few districts planned major changes in their curricula; the major reported change was the addition of physical science courses. The survey also indicated that changes in graduation requirements would not result in a "squeezing out " of vocational and elective courses (California State Department of Education, 1984; Cal Tax Foundation, 1985). While our findings support the increase in science offerings, we do have evidence of reductions in home economics and industrial arts, both in our sample schools and from CBEDS data.

Looking at studies of curricular change done in the past decade gives a sense of how more recent changes fit into a large pattern. Another national survey of trends in high school course offerings and enrollments looked at changes in the high school curriculum from 1972-73 to 1981-82 (National Center for Education Statistics, 1984). This study demonstrates that the move towards increasing math and science courses began in the 1970s. During the nine year period studied, enrollments increased in English, home economics, health and P.E., social sciences, math, natural sciences, art, and vocational and industrial education. There was also a 14% rise in "course-taking behavior." Our findings suggest that these trends toward increased enrollments in both academic and elective and vocational courses may no longer hold true, at least in California high schools.

Another study examined the effects of Proposition 13 on California high school curricula (Catterall and Brizendine, 1985). This study suggests that the course reductions resulting from Proposition 13 in California's eight largest school districts included offerings in A.P. and honors courses, social science electives, foreign languages, industrial arts, home economics, photography, and career education. Our data show a reversal of this trend in A.P. courses and in foreign languages. Home economics and industrial arts, however, continue to disappear. One implication of this data is that the changes in recent years have simply restored academic areas that were cut as a result of Proposition 13.

Although other studies attempt to attribute causes for the curricular changes in high schools, there is no consensus on the primary impetus for change. The survey of school board members (Underwood, Fortune, Cleary, 1985) maintains that local school boards

are responsible for the curricular changes; school board members reported that the major impetus for change came from the local, not the state level. Another study of the effects of minimum competency testing legislation in California on the high school English curriculum (Evans, 1985) found that the state legislation had been a catalyst for change. Evans warned, however, of the difficulties of pinpointing the causes of curricular change. This study also found a return to the more traditionally structured English curriculum in 1981-82, a trend that is supported in our data for 1984-85.

Our study, in conjunction with other recent studies of curricular change, suggests a growing trend toward increasing course offerings in the academic areas of the high school curriculum. Relatively few studies, however, have assessed the effects of these changes on non-academic departments. Our data, and the nationwide survey of vocational educators (Hooper, 1985) raise the possibility that as academic requirements increase, reductions occur in course offerings in non-academic subjects, such as industrial arts and home economics. Future studies might investigate how changes in both the academic and non-academic departments affect the comprehensive high school and its students.

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APPENDIX A

Data on Number of Sections Offered in Sample Schools: 1982-83 and 1984-85 by Department:

Including:

Advanced Placement

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	Adjusted
A	1,580	12	8	1,638	11	7	-8%	-12%
B	2,499	0	0	2,773	0	0	0%	0%
C	1,374	4	3	1,670	9	5	125%	85%
D	1,700	0	0	1,708	0	0	0%	0%
E	2,200	2	1	2,106	2	1	0%	4%
F	150	0	0	146	0	0	0%	0%
G	3,041	0	0	2,576	28	11	2800%	1100%
H	2,003	2	1	2,034	2	1	0%	-2%
I	1,156	4	3	1,451	6	4	50%	20%
J	1,887	13	7	1,666	14	8	8%	22%
K	2,406	2	1	2,483	8	3	300%	288%
L	1,395	10	7	1,838	19	10	90%	44%
M	1,927	32	17	1,738	32	18	0%	11%
N	220	0	0	239	0	0	0%	0%
O	1,102	0	0	1,140	3	3	300%	300%
P	2,566	8	3	2,260	10	4	25%	42%
Q	1,855	0	0	1,574	6	4	600%	400%
R	1,124	0	0	1,336	0	0	0%	0%
S	1,830	10	5	1,564	10	6	0%	17%
T	2,525	16	6	2,962	22	7	38%	17%
TOTAL	34,540	115	62	34,902	182	94		
Average	1,727	6	3	1,745	9	5	216%	117%
Standard Deviation	728	8	4	700	9	5	611%	253%

Note: Adjusted = Adjusted Sections = (Sections/ Enrollment) x 1000

Art

School	1982-83 Enrollment	Number of Sections	Adjusted	1984-85 Enrollment	Number of Sections	Adjusted	% Change Sections	Adjusted
A	1,580	18	11	1,638	17	10	-6%	-9%
B	2,499	37	15	2,773	49	18	32%	19%
C	1,374	9	7	1,670	11	7	22%	1%
D	1,700	10	6	1,708	6	4	-40%	-40%
E	2,200	20	9	2,106	18	9	-10%	-60%
F	150	3	20	146	4	27	33%	37%
G	3,041	31	10	2,576	32	12	3%	22%
H	2,003	21	10	2,034	18	9	-14%	-16%
I	1,156	30	26	1,451	30	21	0%	-20%
J	1,887	56	30	1,666	36	22	-36%	-27%
K	2,406	35	15	2,483	35	14	0%	-3%
L	1,395	14	10	1,838	12	7	-14%	-35%
M	1,927	36	19	1,738	48	28	33%	48%
N	220	6	27	239	12	50	100%	84%
O	1,102	18	16	1,140	19	17	6%	2%
P	2,566	44	17	2,260	50	22	14%	29%
Q	1,855	13	7	1,574	13	8	0%	18%
R	1,124	22	20	1,336	24	18	9%	-8%
S	1,830	26	14	1,564	18	12	-31%	-19%
T	2,525	22	9	2,962	30	10	36%	16%
TOTAL	34,540	471	298	34,902	482	323		
Average	1,727	24	15	1,745	24	16	7%	5%
Standard Deviation	728	13	7	700	14	10	31%	29%

Note: Adjusted = Adjusted Sections = (Sections/ Enrollment) x 1000

Business Education

School	1982-83 Enrollment	Number of Sections	Adjusted	1984-85 Enrollment	Number of Sections	Adjusted	% Change Sections	Adjusted
A	1,580	37	23	1,638	31	19	-16%	-19%
B	2,499	39	16	2,773	44	16	13%	2%
C	1,374	22	16	1,670	22	13	0%	-18%
D	1,700	38	22	1,708	38	22	0%	0%
E	2,200	66	30	2,106	51	24	-23%	-19%
F	150	8	53	146	8	55	0%	3%
G	3,041	59	19	2,576	46	18	-22%	-8%
H	2,003	66	33	2,034	50	25	-24%	-25%
I	1,156	22	19	1,451	20	14	-9%	-28%
J	1,887	36	19	1,666	26	16	-28%	-18%
K	2,406	82	34	2,483	104	42	27%	23%
L	1,395	22	16	1,838	28	15	27%	-3%
M	1,927	22	11	1,738	14	8	-36%	-29%
N	220	8	36	239	8	33	0%	-8%
O	1,102	19	17	1,140	16	14	-16%	-19%
P	2,566	58	23	2,260	62	27	7%	21%
Q	1,855	32	17	1,574	26	17	-19%	-4%
R	1,124	30	27	1,336	26	19	-13%	-27%
S	1,830	28	15	1,564	19	12	-32%	-21%
T	2,525	54	21	2,962	52	18	-4%	-18%
TOTAL	34,540	748	469	34,902	691	427		
Average	1,727	37	23	1,745	35	21	-8%	-11%
Standard Deviation	728	20	10	700	22	11	17%	15%

Note: Adjusted = Adjusted Sections = (Sections/ Enrollment) x 1000

English

School	1982-83 Enrollment	Number of Sections	Adjusted	1984-85 Enrollment	Number of Sections	Adjusted	% Change Sections	Adjusted
A	1,580	116	73	1,638	98	60	-16%	-19%
B	2,499	142	57	2,773	158	57	11%	0%
C	1,374	108	79	1,670	110	66	2%	-16%
D	1,700	113	66	1,708	124	73	10%	9%
E	2,200	107	49	2,106	114	54	7%	11%
F	150	16	107	146	24	164	50%	54%
G	3,041	214	70	2,576	213	83	0%	17%
H	2,003	147	73	2,034	137	67	-7%	-8%
I	1,156	82	71	1,451	90	62	10%	-13%
J	1,887	142	75	1,666	135	81	-5%	8%
K	2,406	144	60	2,483	195	79	35%	31%
L	1,395	135	97	1,838	127	69	-6%	-29%
M	1,927	127	66	1,738	143	82	13%	25%
N	220	26	118	239	20	84	-23%	-29%
O	1,102	115	104	1,140	92	81	-20%	-23%
P	2,566	186	72	2,260	202	89	9%	23%
Q	1,855	104	56	1,574	102	65	-2%	16%
R	1,124	79	70	1,336	89	67	13%	-5%
S	1,830	138	75	1,564	119	76	-14%	1%
T	2,525	240	95	2,962	248	84	3%	12%
TOTAL	34,540	2,481	1,535	34,902	2,540	1,542		
Average	1,727	124	77	1,745	127	77	3%	2%
Standard Deviation	728	52	18	700	56	22	17%	21%

Note: Adjusted = Adjusted Sections = (Sections/Enrollment) x 1000

Foreign Language

School	1982-83 Enrollment	Number of Sections	Adjusted	1984-85 Enrollment	Number of Sections	Adjusted	% Change Sections	Adjusted
A	1,580	47	30	1,638	50	31	6%	3%
B	2,499	42	17	2,773	55	20	31%	18%
C	1,374	40	29	1,670	44	26	10%	-9%
D	1,700	46	27	1,708	44	26	-4%	-5%
E	2,200	60	27	2,106	66	31	10%	15%
F	150	6	40	146	6	41	0%	3%
G	3,041	55	18	2,576	60	23	9%	29%
H	2,003	34	17	2,034	36	18	6%	4%
I	1,156	22	19	1,451	28	19	27%	1%
J	1,887	66	35	1,666	76	46	15%	30%
K	2,406	58	24	2,483	66	27	14%	10%
L	1,395	55	39	1,838	65	35	18%	-10%
M	1,927	46	24	1,738	46	25	0%	11%
N	220	6	27	239	8	33	33%	23%
O	1,102	21	19	1,140	24	21	14%	10%
P	2,566	36	14	2,260	38	17	6%	20%
Q	1,855	42	23	1,574	48	30	14%	35%
R	1,124	24	21	1,336	31	23	29%	9%
S	1,830	34	19	1,564	36	23	6%	24%
T	2,525	58	23	2,962	80	27	38%	18%
TOTAL	34,540	798	492	34,902	907	544		
Average	1,727	40	25	1,745	45	27	14%	12%
Standard Deviation	728	17	7	700	20	7	12%	13%

Note: Adjusted = Adjusted Sections = (Sections/ Enrollment) x 1000

Home Economics

School	1982-83 Enrollment	Number of Sections	Adjusted	1984-85 Enrollment	Number of Sections	Adjusted	% Change Sections	Adjusted
A	1,580	21	13	1,638	10	6	-52%	-54%
B	2,499	32	13	2,773	37	13	16%	4%
C	1,374	13	9	1,670	13	8	0%	-18%
D	1,700	15	9	1,708	10	6	-33%	-34%
E	2,200	34	15	2,106	16	8	-53%	-51%
F	150	6	40	146	8	55	33%	37%
G	3,041	22	7	2,576	15	6	-32%	-20%
H	2,003	18	9	2,034	6	3	-67%	-67%
I	1,156	16	14	1,451	12	8	-25%	-40%
J	1,887	22	12	1,666	18	11	-18%	-7%
K	2,406	52	22	2,483	52	21	0%	-3%
L	1,395	6	4	1,838	6	3	0%	-24%
M	1,927	6	3	1,738	8	5	33%	48%
N	220	6	27	239	2	8	-67%	-69%
O	1,102	10	9	1,140	10	9	0%	-3%
P	2,566	18	7	2,260	14	6	-22%	-12%
Q	1,855	26	14	1,574	14	9	-46%	-37%
R	1,124	7	6	1,336	0	0	-100%	-100%
S	1,830	9	5	1,564	14	9	56%	82%
T	2,525	18	7	2,962	10	3	-44%	-53%
TOTAL	34,540	357	246	34,902	275	197		
Average	1,727	18	12	1,745	14	10	-21%	-21%
Standard Deviation	728	11	9	700	11	11	38%	42%

Note: Adjusted = Adjusted Sections = (Sections/ Enrollment) x 1000

Industrial Arts

School	1982-83 Enrollment	Number of Sections	Adjusted	1984-85 Enrollment	Number of Sections	Adjusted	% Change Sections	Adjusted
A	1,580	30	19	1,638	35	21	17%	13%
B	2,499	39	16	2,773	46	17	18%	6%
C	1,374	17	12	1,670	13	8	-24%	-37%
D	1,700	33	19	1,708	28	16	-15%	-16%
E	2,200	77	35	2,106	61	29	-21%	-17%
F	150	13	87	146	10	68	-23%	-21%
G	3,041	60	20	2,576	47	18	-22%	-8%
H	2,003	78	39	2,034	58	29	-26%	-27%
I	1,156	22	19	1,451	10	7	-55%	-64%
J	1,887	24	13	1,666	22	13	-8%	4%
K	2,406	88	37	2,483	86	35	-2%	-5%
L	1,395	6	4	1,838	6	3	0%	-24%
M	1,927	20	10	1,738	18	10	-10%	0%
N	220	14	64	239	12	50	-14%	-21%
O	1,102	14	13	1,140	18	16	29%	-24%
P	2,566	66	26	2,260	48	21	-27%	-17%
Q	1,855	44	24	1,574	36	23	-18%	-4%
R	1,124	22	20	1,336	21	16	-5%	-20%
S	1,830	31	17	1,564	14	9	-55%	-47%
T	2,525	56	22	2,962	46	16	-18%	-30%
TOTAL	34,540	754	514	34,902	635	425		
Average	1,727	38	26	1,745	32	21	-14%	-16%
Standard Deviation	728	24	19	700	21	15	20%	20%

Note: Adjusted = Adjusted Sections = (Sections/ Enrollment) x 1000

Math

School	1982-83 Enrollment	Number of Sections	Adjusted	1984-85 Enrollment	Number of Sections	Adjusted	% Change Sections	Adjusted
A	1,580	75	47	1,638	74	45	-1%	-5%
B	2,499	110	44	2,773	155	56	41%	27%
C	1,374	80	58	1,670	95	57	19%	-2%
D	1,700	86	51	1,708	100	59	16%	16%
E	2,200	111	50	2106	112	53	1%	5%
F	150	14	93	146	24	164	71%	76%
G	3,041	141	46	2,576	142	55	1%	19%
H	2,003	56	28	2,034	84	41	50%	48%
I	1,156	56	48	1,451	72	50	29%	2%
J	1,887	105	56	1,666	102	61	-3%	10%
K	2,406	120	50	2,483	177	71	48%	43%
L	1,395	95	68	1,838	105	57	11%	-16%
M	1,927	106	55	1,738	113	65	7%	18%
N	220	16	73	239	18	75	13%	4%
O	1,102	61	55	1,140	62	54	2%	-2%
P	2,566	82	32	2,260	112	50	37%	55%
Q	1,855	70	38	1,574	98	62	40%	65%
R	1,124	56	50	1,336	74	55	32%	11%
S	1,830	100	55	1,564	92	59	-8%	8%
T	2,525	138	55	2,962	160	54	16%	-1%
TOTAL	34,540	1,678	1,052	34,902	1,971	1,245		
Average	1,727	84	53	1,745	99	62	21%	19%
Standard Deviation	728	34	14	700	39	25	21%	25%

Note: Adjusted = Adjusted Sections = (Sections/ Enrollment) x 1000

Music

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	Adjusted
A	1,580	9	6	1,638	7	4	-22%	-25%
B	2,499	18	7	2,773	13	5	-28%	-35%
C	1,374	10	7	1,670	11	7	10%	-9%
D	1,700	18	11	1,708	17	10	-6%	-6%
E	2,200	26	12	2,106	24	11	-8%	-4%
F	150	2	13	146	4	27	100%	105%
G	3,041	20	7	2,576	14	5	-30%	-17%
H	2,003	12	6	2,034	8	4	-33%	-34%
I	1,156	15	13	1,451	10	7	-33%	-47%
J	1,887	22	12	1,666	22	13	0%	13%
K	2,406	16	7	2,483	28	11	75%	70%
L	1,395	18	13	1,838	16	9	-11%	-33%
M	1,927	16	8	1,738	18	10	13%	25%
N	220	12	55	239	12	50	0%	-8%
O	1,102	4	4	1,140	9	8	125%	118%
P	2,566	12	5	2,260	14	6	17%	32%
Q	1,855	18	10	1,574	10	6	-44%	-35%
R	1,124	13	12	1,336	11	8	-15%	-29%
S	1,830	14	8	1,564	10	6	-29%	-16%
T	2,525	26	10	2,962	26	9	0%	-15%
TOTAL	34,540	301	223	34,902	284	218		
Average	1,727	15	11	1,745	14	11	4%	3%
Standard Deviation	728	6	0	700	6	10	44%	45%

Note: Adjusted = Adjusted Sections = (Sections/ Enrollment) x 1000

Science

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	Adjusted
A	1,580	62	39	1,638	52	32	-16%	-19%
B	2,499	59	24	2,773	76	27	29%	16%
C	1,374	63	46	1,670	90	54	43%	18%
D	1,700	64	38	1,708	88	52	38%	37%
E	2,200	58	26	2,106	68	32	17%	22%
F	150	10	67	146	14	96	40%	44%
G	3,041	77	25	2,576	82	32	6%	26%
H	2,003	42	21	2,034	63	31	50%	48%
I	1,156	46	40	1,451	58	40	26%	0%
J	1,887	67	36	1,666	79	47	18%	34%
K	2,406	64	27	2,483	66	27	3%	0%
L	1,395	66	47	1,838	73	40	11%	-16%
M	1,927	112	58	1,738	114	66	2%	13%
N	220	8	36	239	12	50	50%	38%
O	1,102	31	28	1,140	51	45	65%	59%
P	2,566	118	46	2,260	146	65	24%	40%
Q	1,855	40	22	1,574	56	36	40%	65%
R	1,124	50	44	1,336	58	43	16%	-2%
S	1,830	56	31	1,564	57	36	2%	19%
T	2,525	80	32	2,962	94	32	18%	0%
TOTAL	34,540	1,173	732	34,902	1,397	882		
Average	1,727	59	37	1,745	70	44	24%	22%
Standard Deviation	728	26	12	700	29	16	20%	23%

Note: Adjusted = Adjusted Sections = (Sections/ Enrollment) x 1000

Social Studies

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	% Change Adjusted
A	1,580	76	48	1,638	79	48	4%	0%
B	2,499	109	44	2,773	123	44	13%	2%
C	1,374	75	55	1,670	84	50	12%	-8%
D	1,700	116	68	1,708	119	70	3%	2%
E	2,200	103	47	2,106	113	54	10%	15%
F	150	20	133	146	18	123	-10%	-8%
G	3,041	152	50	2,576	140	54	-8%	9%
H	2,003	78	39	2,034	68	33	-13%	-14%
I	1,156	66	57	1,451	74	51	12%	-11%
J	1,887	101	54	1,666	94	56	-7%	5%
K	2,406	90	37	2,483	138	56	53%	49%
L	1,395	90	65	1,838	103	56	14%	-13%
M	1,927	121	63	1,738	132	76	9%	21%
N	220	20	91	239	20	84	0%	-8%
O	1,102	96	87	1,140	81	71	-16%	-18%
P	2,566	94	37	2,260	94	42	0%	14%
Q	1,855	90	49	1,574	79	50	-12%	3%
R	1,124	55	49	1,336	60	45	9%	-8%
S	1,830	97	53	1,564	84	54	-13%	1%
T	2,525	138	55	2,962	144	49	4%	-11%
TOTAL	34,540	1,787	1,179	34,902	1,847	1,166		
Average	1,727	89	59	1,745	92	58	3%	1%
Standard Deviation	728	32	22	700	35	19	15%	15%

Note: Adjusted = Adjusted Sections = (Sections/ Enrollment) x 1000

APPENDIX B

Total Enrollment by Subject Area in California High Schools: 1982-83 and 1984-85

(Data from CBEDS)

SUBJECT AREA	1983-84	1984-85	% change
Art	320,269	294,888	-7.9%
Business	177,102	102,187	-42.3%
English	1,616,492	1,545,299	-4.4%
Foreign Language	401,551	143,873	-14.1%
Industrial Arts	304,008	241,809	-20.5%
Math (w/CompSci)	1,084,023	1,160,894	7.1%
Computer Science	51,481	135,664	163.5%
Music	481,853	231,026	-52.1%
Science	630,585	750,653	19.0%
Social Science	1,168,182	1,164,770	-0.3%
TOTAL HS ENROLLMENT	1,263,668	1,305,148	3.0%

Data provided by California State Department of Education

APPENDIX C

Relationship of Parent Education Index to Section Changes in Selected Subjects

Including:

Science Section Changes: Schools with Parent Education *Above* Sample Mean

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	% Change Adjusted
A	1,580	62	39	1,638	52	32	-16%	-19%
B	2,499	59	24	2,773	76	27	29%	16%
C	1,374	63	46	1,670	90	54	43%	18%
G	3,041	77	25	2,576	82	32	6%	26%
J	1,887	67	36	1,666	79	47	18%	34%
L	1,395	66	47	1,838	73	40	11%	-16%
M	1,927	112	58	1,738	114	66	2%	13%
R	1,124	50	44	1,336	58	43	16%	-2%
S	1,830	56	31	1,564	57	36	2%	19%
TOTAL	16,657	612	350	16,799	681	377		
Average	1,851	68	39	1,867	76	42	12%	10%
Standard Deviation	566	17	11	453	18	11	16%	17%

Note: Adjusted = Adjusted Sections = (Sections/Enrollment) x 1000

Science Section Changes: Schools with Parent Education *Below* Sample Mean

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	Adjusted
D	1,700	64	38	1,708	88	52	38%	37%
E	2,200	58	26	2,106	68	32	17%	22%
F	150	10	67	146	14	96	40%	44%
H	2,003	42	21	2,034	63	31	50%	48%
I	1,156	46	40	1,451	58	40	26%	0%
K	2,406	64	27	2,483	66	27	3%	0%
N	220	8	36	239	12	50	50%	38%
O	1,102	31	28	1,140	51	45	65%	59%
P	2,566	118	46	2,260	146	65	24%	40%
Q	1,855	40	22	1,574	56	36	40%	65%
T	2,525	80	32	2,962	94	32	18%	0%
TOTAL	17,883	561	382	18,103	716	504		
Average	1,626	51	35	1,646	65	46	34%	32%
Standard Deviation	825	30	13	837	35	19	17%	22%

Note: Adjusted = Adjusted Sections = (Sections/Enrollment) x 1000

Math Section Changes: Schools with Parent Education *Above* Sample Mean

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	Adjusted
A	1,580	75	47	1,638	74	45	-1%	-5%
B	2,499	110	44	2,773	155	56	41%	27%
C	1,374	80	58	1,670	95	57	19%	-2%
G	3,041	141	46	2,576	142	55	1%	19%
J	1,887	105	56	1,666	102	61	-3%	10%
L	1,395	95	68	1,838	105	57	11%	-16%
M	1,927	106	55	1,738	113	65	7%	18%
R	1,124	56	50	1,336	74	55	32%	11%
S	1,830	100	55	1,564	92	59	-8%	8%
TOTAL	16,657	868	479	16,799	952	511		
Average	1,851	96	53	1,867	106	57	11%	8%
Standard Deviation	566	23	7	453	26	5	16%	13%

Note: Adjusted = Adjusted Sections = (Sections/Enrollment) x 1000

Math Section Changes: Schools with Parent Education *Below* Sample Mean

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	Adjusted
D	1,700	86	51	1,708	100	59	16%	16%
E	2,200	111	50	2,106	112	53	1%	5%
F	150	14	93	146	24	164	71%	76%
H	2,003	56	28	2,034	84	41	50%	48%
I	1,156	56	48	1,451	72	50	29%	2%
K	2,406	120	50	2,483	177	71	48%	43%
N	220	16	73	239	18	75	13%	4%
O	1,102	61	55	1,140	62	54	2%	-2%
P	2,566	82	32	2,260	112	50	37%	55%
Q	1,855	70	38	1,574	98	62	40%	65%
T	2,525	138	55	2,962	160	54	16%	-1%
TOTAL	17,883	810	573	18,103	1,019	734		
Average	1,626	74	52	1,646	93	67	29%	28%
Standard Deviation	825	38	17	837	47	32	21%	28%

Note: Adjusted = Adjusted Section = (Sections/Enrollment) x 1000

Foreign Language Section Changes: Schools with Parent Education *Above* Sample Mean

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	Adjusted
A	1,580	47	30	1,638	50	31	6%	3%
B	2,499	42	17	2,773	55	20	31%	18%
C	1,374	40	29	1,670	44	26	10%	-9%
G	3,041	55	18	2,576	60	23	9%	29%
J	1,887	66	35	1,666	76	46	15%	30%
L	1,395	55	39	1,838	65	35	18%	-10%
M	1,927	46	24	1,738	46	26	0%	11%
R	1,124	24	21	1,336	31	23	29%	9%
S	1,830	34	19	1,564	36	23	6%	24%
TOTAL	16,657	409	232	16,799	463	254		
Average	1,851	45	26	1,867	51	28	14%	11%
Standard Deviation	566	12	8	453	13	8	10%	14%

NOTE: Adjusted = Adjusted Sections = (Sections/Enrollment) x 1000

Foreign Language Section Changes: Schools with Parent Education *Below* Sample Mean

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	Adjusted
D	1,700	46	27	1,708	44	26	-4%	-5%
E	2,200	60	27	2,106	66	31	10%	15%
F	150	6	40	146	6	41	0%	3%
H	2,003	34	17	2,034	36	18	6%	4%
I	1,156	22	19	1,451	28	19	27%	1%
K	2,406	58	24	2,483	66	27	14%	10%
N	220	6	27	239	8	33	33%	23%
O	1,102	21	19	1,140	24	21	14%	10%
P	2,566	36	14	2,260	38	17	6%	20%
Q	1,855	42	23	1,574	48	30	14%	35%
T	2,525	58	23	2,962	80	27	38%	18%
TOTAL	17,883	389	260	18,103	444	291		
Average	1,626	35	24	1,646	40	26	14%	12%
St. Deviation	825	19	7	837	23	7	13%	11%

Note: Adjusted = Adjusted Sections = (Sections/Enrollment) x 1000

Home Economics Section Changes: Schools with Parent Education *Above* Sample Mean

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	Adjusted
A	1,580	21	13	1,638	10	6	-52%	-54%
B	2,499	32	13	2,773	37	13	16%	4%
C	1,374	13	9	1,670	13	8	0%	-18%
G	3,041	22	7	2,576	15	6	-32%	-20%
J	1,887	22	12	1,666	18	11	-18%	-7%
L	1,395	6	4	1,838	6	3	0%	-24%
M	1,927	6	3	1,738	8	5	33%	48%
R	1,124	7	6	1,336	0	0	-100%	-100%
S	1,830	9	5	1,564	14	9	56%	82%
TOTAL	16,657	138	73	16,799	121	61		
Average	1,851	15	8	1,867	13	7	-11%	-10%
Standard Deviation	566	9	4	453	10	4	44%	50%

Note: Adjusted = Adjusted Sections = (Sections/ Enrollment) x 1000

Home Economics Section Changes: Schools with Parent Education *Below* Sample Mean

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	Adjusted
D	1,700	15	9	1,708	10	6	-33%	-34%
E	2,200	34	15	2,106	16	8	-53%	-51%
F	150	6	40	146	8	55	33%	37%
H	2,003	18	9	2,034	6	3	-67%	-67%
I	1,156	16	14	1,451	12	8	-25%	-40%
K	2,406	52	22	2,483	52	21	0%	-3%
N	220	6	27	239	2	8	-67%	-69%
O	1,102	10	9	1,140	10	9	0%	-3%
P	2,566	18	7	2,260	14	6	-22%	-12%
Q	1,855	26	14	1,574	14	9	-46%	-37%
T	2,525	18	7	2,962	10	3	-44%	-53%
TOTAL	17,883	219	173	18,103	154	136		
Average	1,625	20	16	1,646	14	12	-29%	-30%
Standard Deviation	825	13	10	837	13	14	30%	31%

Note: Adjusted = Adjusted Sections = (Sections/Enrollment) x 1000

Industrial Arts Section Changes: Schools with Parent Education *Above* Sample Mean

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	Adjusted
A	1,580	30	19	1,638	35	21	17%	13%
B	2,499	39	16	2,773	46	17	18%	6%
C	1,374	17	12	1,670	13	8	-24%	-37%
G	3,041	60	20	2,576	47	18	-22%	-8%
J	1,887	24	13	1,666	22	13	-8%	4%
L	1,395	66	47	1,838	6	3	-91%	-93%
M	1,927	20	10	1,738	18	10	-10%	0%
R	1,124	22	20	1,336	21	16	-5%	-20%
S	1,830	31	17	1,564	14	9	-55%	-47%
TOTAL	16,657	309	174	16,799	222	115		
Average	1,851	34	19	1,867	25	13	-20%	-20%
Standard Deviation	566	17	10	453	14	5	33%	32%

Note: Adjusted = Adjusted Sections = (Sections/Enrollment) x 1000

Industrial Art Section Changes: Schools with Parent Education *Below* Sample Mean

School	1982-83 Enrollment	Section	Adjusted	1984-85 Enrollment	Section	Adjusted	% Change Section	% Change Adjusted
D	1,700	33	19	1,708	28	16	-15%	-16%
E	2,200	77	35	2,106	61	29	-21%	-17%
F	150	13	87	146	10	68	-23%	-21%
H	2,003	78	39	2,034	58	29	-26%	-27%
I	1,156	22	19	1,451	10	7	-55%	-64%
K	2,406	88	37	2,483	86	35	-2%	-5%
N	220	14	64	239	12	50	-14%	-21%
O	1,102	14	13	1,140	18	16	29%	24%
P	2,566	66	26	2,260	48	21	-27%	-17%
Q	1,855	44	24	1,574	36	23	-18%	-4%
T	2,525	56	22	2,962	46	16	-18%	-30%
TOTAL	17,883	505	384	18,103	413	310		
Average	1,626	46	35	1,646	38	28	-17%	-18%
Standard Deviation	825	27	21	837	24	17	19%	20%

Note: Adjusted = Adjusted Sections = (Sections/Enrollment) x 1000