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ABSTRACT

This report summarizes the major findings of a study of 26 California high schools. The study, Paths through High School, was conducted to describe the characteristics of high school curricula in California, how they are determined and how they differ for various groups of students. Chapter 1 describes the state, district, and school levels of curricular policy and decision making in California's educational system. This chapter also describes the decisions that are made at each level and compares statewide characteristics of the schools with those of the schools in the study. In chapter 2, the major state-level policies of graduation and proficiency requirements are addressed. These have clear effects on particular cohorts of students, but do not standardize programs of study. Students therefore can pursue very different paths through high school, as demonstrated by the courses of study of three students in one of the studied schools. The academic, nonacademic, and elective course requirements of the schools studied are compared. Chapter 3 describes each schools' curricular structure whereby students are placed in various instructional cohorts. Each cohort receives a different curriculum, determined by the department-level tracking system. Sample curricular maps from the schools are analyzed. Chapter 4 outlines the processes used to place and monitor students. In chapter 5, the effects of the policies and practices found are compared in terms of the academic programs available to cohorts of students. The data collection plan for the study and sample student academic programs are provided in the appendices. (JD)

Paths Through High School

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Executive Summary

In 1981 the California State Department of Education commissioned a study of high school curricula in response to the growing concerns of educators, employers, parents, and members of the community about the nature of high school education. Falling test scores and increasing concern of employers about the lack of skills of recent high school graduates led to complaints that high school students did not receive adequate preparation for either college or employment. The study was given further impetus by expectations of a movement to strengthen graduation requirements and the general nature of the high school curriculum. In fact, such changes were effected in 1983 by the passage of Senate Bill 813 (also known as the Hughes-Hart Educational Reform Act). This act increased the graduation requirements by specifying the number of courses that students must complete. The new requirements included the following:

- Three one-year courses in English
- Two one-year courses in mathematics
- Two one-year courses in science, including biological and physical sciences
- Three one-year courses in social studies, including United States history and geography and American government, civics, and economics
- One one-year course in the fine arts or in foreign language
- Two one-year courses in physical education unless the student has been specifically exempted

The effect of such changes is obvious. Students will be taking more classes, requiring more teachers' time, and needing more materials ranging from lab equipment to textbooks. But numerous questions remain about the nature of a high school education. What, for example, should be covered in a "course" in mathematics or English? How much academic work should be required and how many electives should be allowed? Finally, what sort of education should a high school diploma represent?

In response to such questions, the Paths Through High School Study was designed to describe the current nature of high school curricula, how they are determined, and how they differ for various groups of students. Those who conducted the study for the State Department of Education reviewed 26 schools that had been selected to represent the wide diversity of high school students in California. Included in the study were all sizes of schools in urban, rural, and suburban areas, with various mixes of ethnicity, achievement levels, and income levels. During the study, small teams of researchers visited schools for two-day to three-day periods. The researchers interviewed administrators, counselors, and department heads to collect information about the following:

- The decision-making processes used to determine which courses are taught to which students
- How the content, pace, and standards of each course are determined
- How courses are organized into programs of study
- How students are assigned to various skill groups or "tracks"
- How the curriculum varies from track to track

The major findings of the Paths Study are summarized in the paragraphs that follow. The findings are discussed in terms of (1) curricular decision making; (2) graduation requirements; (3) curricular structure; (4) placement and monitoring of students; and (5) comparisons of curricular structures. Finally, some of the implications of the findings for the future of the high school curriculum in California are explored.

Curricular Decision Making

A number of factors determine the curricula offered in California high schools, including the following:

- General state-mandated requirements for graduation from high school
- State-mandated requirements for local basic skills proficiency test
- University of California's requirements for admission (called "a-f" requirements after the list which defines them)
- District graduation requirements and proficiency standards
- District and school support and finances
- Individual subject-area department standards, course sequences, and administrative policies
- Students' needs and interests
- Teachers' expectations, standards, qualifications, and interests

As the locus of responsibility shifts from the state to the district to the department to the teacher, responsibilities become increasingly specific. For example, while statewide requirements for graduation are general, it is the responsibility of the individual departments to design the content of such courses, and it is the teacher who actually determines how that content is conveyed, at what pace the material is delivered, and what the standards will be for determining who has mastered the material. Thus, the *California Education Code* sets out general requirements, while the school districts establish graduation requirements and proficiency standards, as well as policies regarding the length of class periods and the school day. The individual departments design courses and assign teachers. The teachers decide how to present the material and what the homework and grading policies should be. Finally, the teachers assess students' mastery of the material. An important implication of this finding is that, at least for high schools, the department chairpersons and teachers are central to curricular development. An additional factor affecting the curriculum is the admission requirements for the University of California and the California State University and College System. All of the schools surveyed offered courses that fulfilled these requirements.

The distribution of responsibility as described here is, of course, only a general picture. Some districts work with schools to coordinate courses, content, design of course sequences, and testing. Others leave these matters to the discretion of the schools and their departments. In most cases, however, individual departments are responsible for course content, criteria for student placement, course articulation, grading standards, and assignments of teachers. In larger schools most of the responsibility for the day-to-day operations is vested in department chairpersons and vice-principals. The principals of the schools surveyed were responsible for an average of 11 departments. These principals administered large and complex organizations and had little direct involvement in curricular planning.

As a result of the considerable discretion that departments and teachers had in designing courses and presenting course material, the high school curriculum varied greatly from district to district. Such variation occurred both in the courses offered and in the material covered. The greatest consistency in course content across all schools occurred among the courses that had been designed to meet the University of California's requirements. The greatest variation occurred in the more general and remedial courses.

Two additional forces that affected the curriculum were the introduction of the state-mandated basic skills proficiency tests and the cutbacks in resources resulting from Proposition 13. As a result of the proficiency requirements, all schools had to do at least some shifting of resources toward remedial classes. In addition to the pressures created by the proficiency tests, the budget reductions caused by the passage of Proposition 13 placed limits on the resources available to schools. Prominent among the cutbacks were reductions in available textbooks, course materials, and summer school sessions. Because schools were not able to replace or update textbooks, many reported that students in the upper track had to use old textbooks, particularly in history and science. To reduce the loss of textbooks, some schools did not permit students in the lower tracks to take books home with them. Instead, teachers used dittoed homework assignments, and students did their reading during class. This practice, however, reduced the amount of time available for instruction and, as a result, the amount of material that could be covered in the course. At the same time, schools that eliminated summer sessions faced increased class sizes (particularly in required courses such as American history, government, and health) and a concomitant increase in the need for textbooks.

Graduation Requirements

Apart from the state-mandated courses (in which content is not usually specified) graduation requirements are determined locally. As a result, specific courses required for graduation and the content of those courses vary widely throughout the state. Districts usually require the greatest number of units in English, followed by social studies, physical education, mathematics, and science. No school surveyed required a foreign language. A wide discrepancy existed between the courses required in English and social studies (an average of approximately three

years each) and those required in mathematics and science (an average of approximately one year each). Thus, while students frequently were required to study English and social studies during three of their four years in high school, they often studied no more than one year of mathematics or science.

In all, less than half (40 percent) of the units required for graduation were specified academic courses such as English, mathematics, science, and American history and government. The other required units were composed of nonacademic courses, such as physical education and drivers' education, and electives that could be academic or not, according to each student's choice.

For lower-track students who failed state-mandated basic skills proficiency tests, additional courses were assigned to help them pass the tests. To provide such courses, most schools had to reallocate at least some of their resources toward the lower-track remedial courses. Such reallocation often caused schools to offer fewer electives rather than reduce advanced courses in basic subjects such as English, mathematics, and science.

To determine the extent to which the proficiency tests act as a barrier to graduation is difficult. By the time students reach the last half of their senior year and are eligible to graduate, almost all of them have passed the proficiency tests. Available statistics, however, represent only those seniors who do not graduate because they have not completed the coursework or have failed the proficiency tests, or both. These data do not take into account students who have dropped out before reaching their senior year or who have failed repeatedly in the proficiency tests.

Graduation requirements, then, identify the minimum *courses* that must be taken, while proficiency requirements define the minimum *skills* that must be demonstrated before a student may graduate from high school. In terms of specific courses and course content defined by local districts and school boards, there is wide variation throughout the state in all areas of study. The greatest number of units are required in English, while the fewest are required in science. Where schools have to shift resources to meet the needs of students who have failed proficiency tests, such shifts usually have resulted in reduced coursework in English, mathematics, and science. Nevertheless, all the schools reviewed continue to offer full courses of study to prepare students for admission to the University of California.

Curricular Structure

All of the schools surveyed used some sort of "tracking" system—the grouping of students according to skills and aspirations to provide instruction that best meets each student's needs. In general, these tracks include a lower track, a middle or "general" track, an advanced college preparatory track, and a "gifted" or honors track. The lower track (serving between 10 and 20 percent of the high school population) concentrates on providing remedial courses to help students pass the proficiency tests. These courses often are tailored to each student's identified problems on the proficiency tests. The honors track (serving approximately 10 percent of the students) and a more general college preparatory track (serving up to 35 percent of the students) provide courses that meet the University of California's "a-f" requirements. The courses include advanced work (usually in coordinated, traditional sequences) in English, mathematics, and science. The rest of the students take courses in a middle or "general" track. These students have passed or are expected to pass their proficiency tests, but they have not expressed an intention to go on to higher education. The courses offered for these students may prepare them for the more advanced upper-level courses (as in the case of a student completing a general mathematics course and enrolling in algebra), but counselors and teachers report comparatively little of such upward movement between the tracks.

Students are assigned to the tracks based on criteria such as past performance, test scores, and teachers' recommendations. In some cases assignments are made on the basis of general skills, such as reading levels. In others, such as some science tracks, placement may be made on the basis of skills necessary to the study, such as the ability to do equations. Placement is not permanent, and students generally are free to choose courses in other tracks; however, school personnel report that students generally remain in the tracks to which they are assigned.

Placement and Monitoring of Students

The classes that students choose, the ways in which they choose them, and the extent to which they receive counseling, information, and support from their schools are largely functions of the tracks to which they have been assigned. The initial placement in a track and the suggestions for courses are mainly the responsibility of the school counselors. However, the amount of individual attention each student receives varies, depending on the counselor/student ratio in a particular school.

In the schools surveyed, the counselor/student ratio ranged from 1 to 239 to 1 to 540. The average ratio was 1 to 369, with one school reporting having no counselors. Such heavy work loads severely limit the amount of time any school staff member devotes exclusively to assessing students' needs and planning appropriate programs of study. In fact, counselors reported that they spent the most time with students in the lower and upper tracks.

Lower-track students come to the attention of counselors when they fail proficiency tests or fall behind in completing graduation requirements. Upper-track, college-bound students, on the other hand, need information about courses, colleges, and scholarships. Furthermore, a school's reputation is based largely on the number of students who enter the University of California and other four-year colleges; thus, upper-track students receive particular attention. Counselors spend the least amount of time with lower-track and middle-track students who present no immediate problems and who do not request the kind of information provided to college-bound students. Yet, these students often are in most need of information regarding jobs, training, or further education.

The heavy work load assigned to most counselors affects not only the amount of time they can spend working with students but also the quality of the information they provide. Some schools assign counselors to work with individual subject-area departments and to attend faculty meetings and discuss course content. In many cases, however, counselors must rely on the course catalogs for their knowledge of what the school offers.

At the same time that counselors are working with the faculty, they must spend large amounts of time monitoring students' progress in completing courses required for graduation and taking proficiency tests. Although some schools have begun to use computers to perform such monitoring, most counselors must still devote much of their time to this task. These extensive, largely clerical duties reduce the time counselors might spend learning about the school's offerings, planning appropriate programs for students, gathering information about post-high school opportunities, and working with students.

Comparisons of Curricular Structures

As the time that counselors spend with students depends largely on the tracks to which students are assigned, so too does the education that the students receive. The California high school diploma does not represent a single core of knowledge or experience. The sources of difference are numerous: different incentives, different courses and content, lack of adequate textbooks for lower-track students, different access to higher level courses, and different sequences of courses.

Generally, students tend to complete the courses they need for whatever they intend to do after high school. Those who do not plan further education take the minimum number of academic courses necessary to graduate. Even students who plan to attend the University of California or other four-year institutions tend to take only the courses required for admission. However, the University of California requirements do provide sufficient incentive for the schools to offer—and for students to take—courses that provide a very different education from that acquired by students who are not going to college. Where lower-track students would complete a one-year mathematics requirement in a general course, such as those entitled "Basic Mathematics" or "High School Mathematics," college-bound student would fulfill the same requirement with a course in algebra. Similarly, a one-year science requirement might be fulfilled by either a basic, general course, such as "Earth Science," or by a college preparatory course in biology.

On the one hand such differentiation of courses enables schools to provide instruction appropriate to students of different skill levels. On the other hand this differentiation has produced a divided curriculum in which students in lower tracks rarely enroll in more advanced coursework. This difference is aggravated by the lack of adequate textbooks for lower-track students. Teachers complain that there are too few textbooks available for students who read below grade level. The problem is further aggravated when lower-track students are not allowed to take their textbooks home with them. Homework then becomes classwork, and the amount of material that can be covered in the course is reduced.

An additional barrier to lower-track students and some general-track students is the lack of access to more advanced courses. Frequently, these courses require skills that lower-track students are not taught. For example, a student in a lower-track mathematics course would have difficulty acquiring the skills necessary to enroll in and complete the algebra that is a prerequisite to chemistry. Furthermore, course sequences are shorter in the lower tracks, so that students enrolled in a one-year general mathematics course do not develop the mathematical skills they would in an algebra-geometry-trigonometry sequence of courses. In some cases course sequences for lower-track or general-track students do not extend through a full four-year program.

Summary

The information collected during the study conveys a picture of students who may attend the same school but who come away with very different educational experiences. Included in the differences are the attention they receive from counselors, the subjects they study, the textbooks they read, the expectations their teachers have of them, the amount of homework they do, and even the amount of time they spend in class.

The high school diploma does not represent a core curriculum, even in the most general sense, of knowledge studied or learned. On the contrary, the educa-

tion students receive is, in large part, determined by the track to which they are assigned when they enter high school. Those most gravely affected by this problem are general-track or lower-track students who present no immediate "problems" to the school. They have passed their proficiency tests and are progressing through their planned programs more or less on schedule. Because they are expected to graduate, they do not require special classes or counseling. Because they do not expect to go to college, they do not request information about colleges or scholarships.

These general-track or lower-track students generally study the minimum necessary to pass their proficiency tests and complete their graduation requirements. They therefore receive little attention from their counselors. Teachers assign less homework, courses cover less material, and some students may not even be allowed to take their textbooks home. For the most part, they do not progress to more advanced coursework nor do they receive extensive counseling about opportunities after high school. Furthermore, this problem is not confined to students in the middle or lower tracks. Even students in the upper tracks often take only those courses required for admission to college. When students complete these sequences, they tend to take fewer academic electives than are possible.

The Senate Bill 813 revisions, which specify the number of years of study required for each subject, represent the beginning of an effort to redefine the nature of the high school education. But even these requirements address only the time spent in class, not the substance of the courses. The Paths Study has demonstrated how courses in a single field (e.g., mathematics) may cover vastly different areas of study and how even classes with similar titles (e.g., American government) may vary widely in the breadth and depth with which they approach a subject.

If a high school diploma is to represent more than a record of attendance, it is important to develop a more comprehensive curriculum for *all* students. This is by no means a simple task. While continuing to address the diverse skills and needs of the students enrolled, the curriculum must be modified to include a central core of knowledge in all tracks. At the same time all course sequences must be better integrated to ensure a full four-year program of progressively more advanced work. It is essential, too, that these courses be supported with adequate textbooks and materials. This involves providing students with sufficient instructional materials and with up-to-date textbooks that are appropriate to their reading levels.

Finally, the efforts of the entire school staff, from administrators and counselors to teachers and department chairpersons, must be directed to increasing their expectations of students rather than accepting a bare minimum course of study. Only if we require more of our students will our students begin to learn to require more of themselves.

Introduction

This report summarizes the major findings of a study of 26 California high schools. Called Paths Through High School, the study was conducted for the Program Evaluation and Research Division, State Department of Education, to describe the characteristics of high school curricula in California. The study resulted from concern about the curriculum and declining achievement scores among California's high school students. Many people believe, for example, that high school graduates are insufficiently prepared for either work or higher education. In addition, many people share specific concerns about the secondary education curriculum because it is affected by declining financial resources, pressures for higher proficiency, and pressure to serve growing linguistic and cultural minority populations.

To respond to these concerns, the Department of Education and Stanford University researchers planned and conducted case studies of 26 California high schools during the spring of the 1981-82 school year. Interviewers spent several days at each school collecting both qualitative and quantitative information. They interviewed principals, vice-principals for instruction, counselors, and chairpersons in the English, mathematics, and science departments. In addition, data from statewide sources and from materials and records at the schools were included in the case reports. The intention was to use complementary sources of data to develop a comprehensive picture of the current curriculum and the forces that affect it. The case studies, the statewide data, school documents, and interviews provided a rich foundation from which to investigate particular issues of secondary education.

Background of High School System

California's educational environment has continued to change dramatically. Enrollments have peaked and declined. Revenues have been cut back and equalized, and minority and special populations have put increasing pressure on schools to accommodate their needs. In the midst of this retrenchment, public concern about the quality of secondary education has increased. Pressure for higher educational standards and improved results have come at a time when fiscal and demographic pressures have been straining school resources and flexibility.

The current political pressure for higher standards and increased achievement is supported by both employers and educators. The National Commission on Excellence in Education, in its report *A Nation at Risk: The Imperative for Educational Reform,* found that:

> Business and military leaders complain that they are required to spend millions of dollars on costly remedial education and training programs in such basic skills as reading, writing, spelling, and computation.[1]

The entrance requirements at higher education institutions in California have been increasing so that the number of remedial courses needed for entering students may be reduced. In addition, the University of California gradually has increased specifications of the course content that will be accepted to fulfill entrance requirements. These changes reverse the trend of the 1970s in which many different courses were approved for the college preparatory curriculum. When school enrollment peaked, the curriculum was expanded to include new areas of content such as psychology, political science, and oceanography. Such courses are no longer accepted to fulfill entrance requirements. Instead, higher-order reading, writing, and mathematical skills are being emphasized.

Cultural and linguistic minorities are becoming an increasing proportion of the school population. Minority students' success rates are significantly lower than those of nonminority students. The rate at which the largest and fastest growing minority group, Hispanic

[1]David P. Gardner and others. *A Nation at Risk: The Imperative for Educational Reform.* Washington, D.C.: National Commission on Excellence in Education, U.S. Department of Education, 1983, p. 9.

students, completes high school is about half that of non-Hispanic students. The entry of Hispanic students into postsecondary institutions has not increased substantially over the past decade, nor have they gained access to well-paid jobs. This condition is particularly troublesome, because minority students will make up the majority of the student population in public schools within the next two decades.

The enactment of Assembly Bill 3408 (1976) represented the California Legislature's response to a growing public demand for increased emphasis on the basic skills in public education. The legislation required school districts to establish proficiency standards for graduation in the areas of reading, writing, and computation. However, this legislation was difficult to implement and had unforeseen side effects. For instance, there has been growing concern on the part of educators that minimum competency testing and the emphasis on basic skills have eroded the curriculum, replacing more advanced courses and higher order skill development. Also, the authors of a previous state study, "Pupil Proficiency Assessment in California, 1981 Status Report," found that as many students did not graduate because they failed to meet graduation requirements as did those who failed proficiency tests. The following two questions naturally arise from these findings:

- Why are students failing to complete a course of study if they are passing proficiency tests?
- What are the barriers to completing a successful path of coursework through high school?

Focus and Content of the Study

This project was designed to provide data for policymakers who were concerned about the quality of high school education. Various policy changes were considered in an attempt to increase the achievement of high school students. Rather than searching for the "best" classroom practices or testing competing theories of instruction, the principal task was to develop a comprehensive and thorough understanding of the major, policy-amenable forces that affect course enrollment in high schools. In addition, data were collected to address specific areas of concern, such as the availability of advanced-level courses, and the effect of proficiency assessment on the curriculum. The intention was to provide a data base that would facilitate answering questions about the California high school curriculum and enlighten state and local policymakers.

This study described the various paths of courses that students take through academic offerings in the high school curriculum. The resulting picture filled a gap in the current literature and knowledge about high schools and curriculum. Curriculum research usually considered the way a teacher presents material at the classroom level. However, this level of inquiry required observing classrooms over a period of time, which would be impossible in a large-scale study that was designed to generalize across high schools. This study's major objectives were to:

- Focus on courses as the unit of curriculum.
- Investigate decision-making processes that determine which courses will be taught to whom, and the content, pace, and standards set for students.
- Investigate the organization of courses into whole programs of study.

Background demographic, organizational, historical, and impressionistic data were gathered in each school studied. Table 8 in Chapter One contains comparative information about the 26 schools in the case study. Detailed descriptions of graduation requirements were obtained to demonstrate variations among schools. School staff members were asked about the effects of proficiency assessment on curricular offerings. A complete list of topics covered in the data collection is provided in Appendix A.

School administrators and counselors were asked for the following information:

1. Managerial Information—Descriptive Data on Schools
   a. Enrollment and grade level structure
   b. Special funding sources (special education, school improvement)
   c. Attendance rates (daily excused and unexcused absences, class cuts)
   d. Graduation rates (nongraduate breakdown by course requirements and proficiency test failures)
   e. Proficiency testing results for classes of 1981-82
   f. Dropout rate and definition
   g. Size of classes (high, low, and average)
   h. Minutes per class period
   i. Number of class periods taken by students (average, minimum, maximum)
   j. Departmental structure
   k. Characteristics of student population (mobility, aspirations, socioeconomic status, and so forth)
2. Graduation Requirements
   a. Courses required for graduation by subject area
   b. Specificity of course requirements by track
   c. Definition of unit used for course credit
3. Postgraduation Data
   a. Sources and information available about students' plans or actual destinations
   b. Proportions of students attending universities and colleges or entering jobs

c. Length of time students are followed
d. Use of information about students' destinations in curriculum planning and counseling

4. Curriculum Policy and Management
   a. Descriptions of school policies and practices for determining the following: courses offered at the school; determination of course content; assignment of teachers and their qualifications; course enrollment (tracking); placement of students; course articulation; monitoring students' progress in proficiency and graduation requirements; grading standards; students' work assignments
   b. External factors affecting curriculum and instruction
   c. Effects of proficiency assessment

5. Curriculum Differentiation
   a. Number of tracks
   b. For each track, the name or description of destination (e.g., college preparatory); percent of student body in each track; typical course sequences in track
   c. Sequential characteristics of tracks and courses
   d. Articulation within departments
   e. Basis for grouping or not grouping students

6. Departmental Organization
   a. Subject areas represented
   b. Full-time-equivalent (FTE) employees
   c. Class sizes
   d. Number of course titles offered and number of students enrolled

7. Detailed descriptions of English, mathematics, and science departments
   a. Content areas included
   b. Organizational structure
   c. Proficiency assessment, instruction, and remediation
   d. Department approach to providing advanced level coursework
   e. Policies, procedures, and decision-making processes used with regard to course offerings and content, assignment of teachers, placement of students, articulation and coordination among courses, University of California a-f requirements, textbooks used, course rigor, grading standards, and homework

8. Students' Access to the Curriculum
   a. Process by which students are placed in courses
   b. When and how students receive information about courses
   c. Counselors' knowledge about courses and students
   d. Students' mobility between tracks

To determine specific course policies, the researchers studied three departments in depth: English, mathematics, and science. The focus on these three departments reflected limited resources and the prevalent public concerns and did not reflect a bias toward these areas as being more important than other subject areas.

Design and Methodology of the Study

The project consisted of 26 structured case studies conducted throughout California during the 1981-82 school year. Researchers used statewide data sources in selecting schools that represented the diversity of schools across the state and that allowed some generalization of findings beyond the schools that were studied. By structuring the case studies, the researchers obtained comparable survey-type data as well as narratives and perceptions from collectors of data. The format of the case study report is available on request.

The strengths in the design of this study allowed researchers to describe the complexity of practices in schools from the local perspective and to compare findings across very different schools. The limitations of the study required researchers to rely on interviews rather than on observations of actual practices.

Organization of the Report

The report was organized in such a way as to build a progressively more detailed picture of the curricular policies and practices used by the schools studied.

Chapter One describes the levels of curricular policy and decision making in California's educational system. Chapter One also describes the decisions that are made at each level and portrays characteristics of the schools across the state and in the Paths Study.

Chapter Two addresses the major state-level policies of graduation and proficiency requirements. These policies and requirements have clear effects on particular cohorts of students but do not standardize programs of study. Students therefore can pursue very different paths through high school, as demonstrated by the courses of study of three students in one Paths' school. The academic, nonacademic, and elective course requirements of the schools studied are compared.

Chapter Three describes each school's curricular structure in which students are placed in various instructional cohorts of students. Each cohort receives

a different curriculum, determined by the department-level tracking system. Sample curricular maps from the schools in the study are analyzed.

Chapter Four outlines the processes used to place and monitor students. Students have various amounts of support in navigating a successful or optimal path through the curriculum. The complexities and problems of monitoring the progress of students through high school are examined.

In Chapter Five the effects of the policies and practices found are compared in terms of the academic programs available to cohorts of students.

A list of study topics and sample programs of study are shown in Appendixes A and B.

CHAPTER ONE

Curricular Decision Making in California Secondary Education

Summary

Policies and practices that govern secondary curricula are determined and carried out at six levels of California's educational system. The curriculum that students receive depends on planning and coordination by individual teachers, at the department level within schools, by schools, districts, and counties, and at the state level. Implementation of state-level policies are mediated by personnel in each intermediate organizational level until carried out by individual teachers. This hierarchical structure affects the consistency of secondary curricula across the state.

At the state level the legislated curricular policies investigated in this study were the courses of study and proficiency requirements for graduation described in Chapter Two. College entrance requirements, even though they were not legislated, had very important curricular impact statewide. The pervasive effect of college entrance requirements on the college preparatory curriculum and placement practices was evident in all schools studied.

Vocational programs are provided at the county level. The districts establish graduation requirements, designate the courses to be offered, and determine the length of the school day and class periods. The schools establish course schedules and assign teachers. Each school monitors and places its students.

Major decisions about content and standards were delegated to departments within schools. Principals had little direct involvement in curricular planning and relied on department chairpersons or other personnel for curriculum management. Principals in the schools that were studied administered complex organizations with an average of 11 departments per school, plus special programs. In addition, principals had been in their schools a significantly shorter time than other staff members had. These findings raise questions about having principals serve as "instructional leaders" in the high schools.

Subject-area departments determined the specific courses and content to be offered and the specific assignment of teachers. Individual teachers within departments had varying amounts of control over courses and content, but in all schools they had final responsibility for setting standards, assignments, and

homework. Teachers planned their courses within the constraints set at other levels (e.g., requirement, resources, and time) and within the departmental agreements about content and sequences. Teachers reported adjusting their courses and expectations according to the students enrolled in each class. Maintaining consistent standards and planning sequences of content and courses were difficult in schools where students' transiency and absence rates were high.

California's 780 comprehensive high schools vary enormously in size, in overall achievement and demographics, and in the types of students served within each school. The Paths' schools were selected to capture this extreme diversity and provide a picture of the differences in schools that face state-level policymakers. This diversity and the resulting variation in local curricular policies and practices increased the difficulty of implementing state-level curricular policies.

Curriculum, or the content of schooling, is influenced at many levels of the educational system. Decisions made at each level are not as distinctly separate, as illustrated by the following examples:

- The decisions evolve as they flow from level to level, gaining specificity until actually enacted in each classroom by each teacher.
- Managerial strategies and levels at which policies and practices are determined were found to differ across the schools in the study.

These organizational levels of control determine and manage delivery of curriculum in secondary schools across the state. Federal and state policies directed toward lower levels are mediated by the policies at each intermediate level. This chapter describes the organizational hierarchy that determines what is taught to whom in California high schools and the differences found in the Paths' schools regarding these decision-making levels.

County-level policies were not specifically investigated in this study, but vocational education was provided through regional occupational centers (ROCs) at the county level. The data indicated that comprehensive high schools do not offer fully articulated, job-entry, vocational programs. These programs are primarily provided through ROCs, community colleges, or other programs outside of the public high schools. In California the availability of vocational training at the ROCs and community colleges relieves the comprehensive high schools of the financial burden of providing a wide array of specific vocational training programs. School administrators reported that they were not able to provide up-to-date equipment and instruction in vocational courses, but they were able to prepare students for programs conducted by other public or private agencies.

Curricular Policymaking at the State Level

Curricular policies that are enacted at the state level must cope with the following two major [illegible]lities of the California public school system:

- A history of local control and autonomy
- Extreme differences in size, wealth, and other characteristics of schools and districts

Historically, curricular policies and practices have been local responsibilities. Although control of the state's school finances and teacher credentialing has become increasingly centralized, issues of curriculum and teaching have remained decentralized at the district, school, and teacher levels of jurisdiction. California's school districts have had local autonomy over curricular choices and instructional practices.

Some of the most important differences among schools and districts are described in this chapter. At each organizational or policy level, the variation

statewide and within the Paths' sample is discussed with regard to its effect on curricular policymaking. The combined effects of local autonomy and differences counteract most moves toward statewide consistency of secondary curriculum.

Statewide Policies

The two legislated policies investigated in this study were the course of study and proficiency requirements for graduation. Local implementations of these requirements are described in Chapter Two. The requirements do not ensure a common core of curricular experience across schools and students. Only certain minimal expectations are defined by the proficiency requirements.

As described in Chapter Three, courses were planned by teachers within their departments for several achievement cohorts. The number of cohorts varied across the schools in the study. Courses were planned for as few as three or as many as five achievement cohorts. In addition, the number of courses offered in academic areas for each cohort varied across the schools. The number of sequentially planned mathematics, English, and science courses available to students depended on their relative achievement levels and the course planning process in each department.

The notable exception to this variation in course offerings was found within sequences planned for the highest achieving group, those students who intended to apply to the University of California or a private university. All schools in the study reportedly provided courses meeting the University of California a-f requirements, creating the most consistent set of courses for a single cohort found across the study schools. All department chairpersons reported planning the highest level of sequences to meet the a-f requirements. Much more variation was found in course titles and sequences of courses provided for middle-track and lower-track students. Local factors were cited as influencing the planning of courses and sequences for these students, and unique configurations of courses were developed in each school.

Counseling and placement were also oriented toward college entrance requirements. Students' programs of study were planned to meet their aspirations for postsecondary education. Counselors who were familiar with University of California requirements helped the highest achieving students design their programs of study. This contrasted particularly with the programs for lower-achieving students; those programs will be described in subsequent chapters.

Statewide Characteristics of High Schools

According to a statewide database—California Basic Educational Data System (CBEDS)—there were about 280,000 twelfth graders in public high schools in 1981-82. The breakdown of schools in which these students were enrolled is shown in Table 1.

The impetus of this study relates most directly to what is known as public comprehensive high schools, which are included in the California Assessment Program (CAP). Paths' case study schools were selected only within the 780 CAP high schools for the following three reasons:

- These schools enroll the vast majority of students (93 percent).
- CAP provides important information for selecting and describing schools, particularly basic academic achievement data.
- The non-CAP schools are primarily those developed for special populations and as such have governance policies that are different from those of the comprehensive high schools.

Only 220,000 of the 260,000 twelfth graders in the 780 CAP high schools completed the CAP tests in 1981-82. No single explanation for this was discovered in the case studies, but absenteeism, student transiency, and differences across schools in retesting procedures were cited. Monitoring students' enrollment and testing is a major problem for school personnel, and the total enrollment figure itself is subject to some question. (Monitoring of students is discussed in Chapter Four.) Which students and how many students are not being tested may be important testing policy issues for further study.

High school students are distributed unevenly across schools and districts in California. Many districts

Table 1

Distribution of Twelfth Grade Students by Type of Public School

Type of school	*Twelfth grade enrollment*
780 comprehensive high schools	260,000
637 special schools with grade eleven or grade twelve	
155 county-run schools (juvenile court schools and so forth)	1,500
424 others (continuation and alternative schools)	20,000
58 ROC or ROP (36,610 students are included in other categories)	
1,417 total schools with twelfth grade enrollment	281,500

Source: California Basic Educational Data System

have fewer than 100 students, and a few districts enroll over 50,000 students. Because districts vary in grade level structure (elementary, high school, and unified), district size comparisons will be made in terms of a single class or cohort (twelfth graders). As shown in Figure 1, roughly half of the districts with a high school enrolled only 10 percent of the twelfth graders. Conversely, about half of the twelfth graders were enrolled in only 10 percent of California's districts, the 40 largest ones.

What this means for educational policy is that the curricular decisions made in 40 districts (the largest ones) have a greater than proportional effect on students (and presumably on their achievement). State policies, too, may have very different effects and place different pressures on smaller or larger districts with correspondingly smaller or larger district staffs.

Sampling randomly from schools in the 380 districts would not have produced information on district policies in proportion to the numbers of students affected. Therefore, the districts in which Paths' schools were selected are in rough proportion to the distribution of students, as shown in Table 2. For example:

- About 50 percent (14) of the Paths' schools are in the 40 largest districts, including the five largest districts.
- About 40 percent (nine) are in the medium-sized districts.
- About 10 percent (three) are in the smallest districts.

Districts and schools vary greatly not only in size but also in other ways that potentially affect curricular planning. The 26 schools in the Paths' Study were

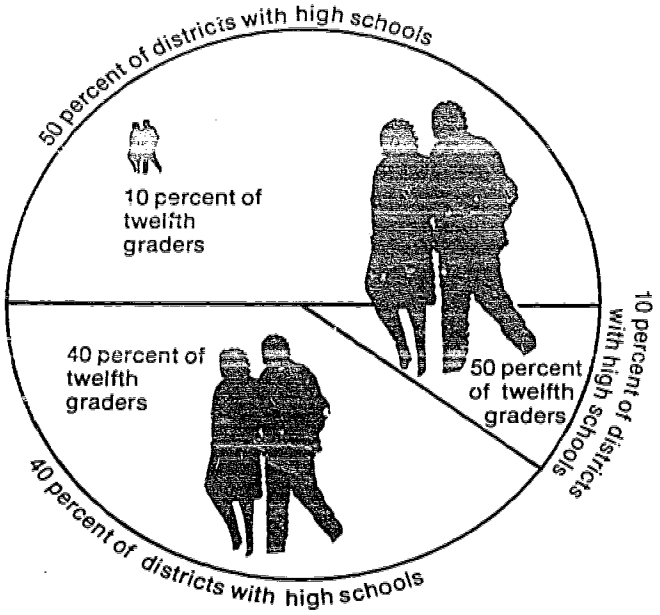


Fig. 1. Percentage of twelfth-grade enrollment across districts (1981-82)

Table 2

Twelfth-Grade Enrollment in the Schools in the Paths' Study

Number of twelfth graders in district	*Statewide*		*Paths' study schools selected*	
	Number of districts	*Percent of twelfth graders*	*Number*	*Percent*
0—325	193	10	3	11
325—1,550	147	40	9	35
1,550—32,000	40	50	14	54
	380	100%	26	100%

Source: California Basic Educational Data System

purposefully selected to represent the range of the most important sources of variation. These are:

- Size (district and school)
- Socioeconomic status (educational level of parents—CAP)
- Achievement (CAP)
- Minority enrollment (total percent and particular ethnic groups)

This sample was not selected to represent the central tendencies of the statewide distributions. Instead, it captured the range of characteristics that affect the implementation of state-level curricular policies. In addition to selecting schools across the range of each variable listed above, schools were selected across the state to identify geographic, employment, and political differences.

Curricular Policies and Practices at the School District Level

School periods ranged from 45 to 55 minutes, with a mean of 51.2. Students took an average of 5.7 classes per day. Students could take as many as eight classes or as few as one, depending on their year in school, completion of requirements, outside employment, or other programs available outside the school.

Course Offerings

The district's administrators and members of the school board are responsible for major curricular decisions—setting course graduation requirements and proficiency standards. Districts develop or approve the lists of courses that can be offered at each school. Districts may have detailed scope and sequence descriptions of course or content areas, or they may have overall, general statements of goals for skills and content in each subject area. In most cases, these requirements and course lists are generic and they describe broad content areas or topics that are standardized to widely varying degrees. Schools (and departments and teachers) have varying autonomy across districts to determine the specific content that fulfills the requirements.

Some districts attempt to coordinate curriculum, courses, content, sequences, assessment, and access through testing programs, curriculum committee discussion, and staff development. Other districts leave these issues to school-level decision makers. These organizational processes also involve subtle interrelationships and can shift responsibility or control back and forth. For example, new courses or major changes in existing courses can be initiated by teachers, departments, schools, district personnel, school boards, or various other groups in schools and the community at different times.

Paths' schools either selected their courses from a district "active list" of allowable courses or chose them according to district guidelines. Decisions regarding course offerings tended to hinge on what was traditionally offered at the school, enrollment projections or actual preenrollment information, teachers' preferences, and availability.

Assignment of Teachers

The assignment of teachers to specific courses or areas and the assessment of teachers' qualifications are sometimes coordinated by districts through personnel policies, with varying specificity. In all schools teachers taught subjects for which they were qualified. However, in one school the most qualified science teacher was assigned to teach calculus. In another school the mathematics teachers taught the most advanced mathematics courses, and other teachers were assigned the lowest level (remedial) courses. In one of the smaller schools, teachers developed expertise and taught outside their credentialed areas because no one else was available. Thus, the ways in which teachers were judged to be qualified and assigned varied significantly across the districts studied.

Progress of Students

Monitoring of students' progress was most often delegated to schools through courses and requirements, grading standards, and students' placement or grouping criteria. A few districts had centralized computer facilities to monitor students, but most districts did not use the technology available for managing curriculum or monitoring students.

Grading Policies

All districts studied had grading policies and monitored grade distributions by school or teacher. However, few related or anchored grades to any standardized measures of achievement or specific achievement criteria (books read, papers written, and so on). Some districts used staff development or teacher in-service training to coordinate curriculum and teaching (e.g., the Bay Area Writing Project). These districts provided common standards and grading procedures that were specific to topics or skills. Grading standards most often were determined by individual teachers.

Homework Policies

Some districts had homework and class assignment policies, either by grade level or subject. For example,

homework could be recommended at the secondary level for a half-hour per subject each day. Homework policies were generally set at the school, department, or teacher level.

In summary, districts varied in how specifically they coordinated curricular policies. They differed greatly in other ways, which may help to explain the various methods they use to set curricular policies. In addition, larger districts had support services (e.g., curriculum coordinators) that were not available in the smaller districts.

Variations in District Characteristics

California's extreme range of geographical characteristics and population density result in widely differing districts and schools within those districts. Teachers and administrators who were interviewed frequently referred to the "unique" character of the community in describing their school policies and practices. To adequately cover these differences in the investigation, those conducting the study selected Paths' schools within urban, suburban, rural, and mixed districts across the state. The northernmost lumber town, isolated mountain areas, huge rural and urban central valley districts, city centers, and traditional suburbs were represented.

Type of district. Grade-level structure has implications for coordinating curricular policies and practices, such as proficiency and course of study requirements. California school districts have three grade-level structures, as shown in Table 3.

Course offerings in three-year and four-year high schools are different, and articulation between junior and senior high schools affects curriculum planning. Lack of consistent grade-level structure across districts and schools makes implementation of state-level policies for secondary schools more complex.

The largest districts tend to be unified. The smallest have elementary grades only. This study includes only schools from the 380 secondary-only and unified districts in its focus on high school policies.

Method of financing. The per-pupil expenditure figures used here are the 1981-82 district revenue limits, determined by legislative formulas to comply with court-ordered equalization of spending (*Serrano*). The mean revenue limit for all 380 districts with high schools was about $2,000. The lowest was approximately $1,750, and the highest was $3,400. Among the Paths' schools the lowest was $1,800, and the highest was $2,400.

Number of course offerings. Two of the schools in the study reported that loss of their summer school programs after Proposition 13 was the most significant factor that contributed to the reduction in the number of course offerings; in addition, curriculum, instruction, and curricular organization have been affected.

In one school personnel cited significant reduction in the number of advanced English and science courses. Previously, college-bound students would take "basic" subjects during summer sessions and have time available for advanced academic electives during the regular school year. When summer school was eliminated, these students no longer had time to take the most advanced level courses.

Another school had run a large summer program for many years, with a steady enrollment of about 1,100 students. Included in this group were (1) incoming freshmen taking pre-English, pre-algebra, or typing; (2) students making up failed courses or deficient credits needed for graduation; and (3) college preparatory students taking requirements such as history, government, or the third semester of algebra to be able to take advanced academic electives during regular semesters. Students who previously had a chance to make up classes during the summer were forced to take these classes during the regular semester, increasing class sizes and aggravating the shortage of books. American history/government and health courses (required for all students) were under particular stress. Summer school previously had provided the departments and teachers with an opportunity to try out new courses and new teaching methods.

Table 3

Number of Districts, by Grade-Level Structures

Type of district	*Number*
Elementary only (kindergarten through grades seven, eight, and nine; may include junior high)	661
High school only (grade nine or grades ten through twelve)	115
Unified (kindergarten through grade twelve)	265
Total	1,041

School-Level Curricular Policies and Practices

School-level policies have a potential to affect curriculum planning and coordination, but several factors mitigate school-level efforts. School administrators have to coordinate the efforts of many different departments and specially funded programs (Table 4). Paths' schools had an average of 11 different departments and several important special programs. Paths' schools varied in size of departments from one teacher to 29 full-time-equivalent positions (Table 5).

Table 4

Specially Funded Programs in the 26 Paths' Schools

Funding source	*Number of Paths' schools*
Special education	22
Compensatory education (Title I)	15
Bilingual	13
School Improvement Program	8
ROP	3
Other special programs	17

In the Paths' schools decisions about course content, criteria for student placement, course articulation, grading standards, and teacher assignments were found to be made at the department level. Only a few schools had a school policy of maintaining articulated courses or standardized practices across departments. School-level practices that were reported to promote interdepartmental coordination included arranging meetings of department chairpersons with counselors and vice-principals and scheduling and planning meetings for particular student cohorts or special populations (e.g., college preparatory, remedial, or bilingual students).

Principals in the schools in the study had little involvement in the curriculum. When asked about the structure of the curriculum and the ways in which decisions about courses were made, principals referred interviewers to vice-principals or department heads. In all schools decisions not made at other levels (i.e., district) were considered the domain of the teaching staff. Principals had little to do with actual instruction or curricular planning. An individual principal's knowledge of specific details about the curriculum depended on the size of the school, the principal's role regarding teaching and curricular planning, and the length of time the principal had been at the school.

In small schools or in schools where principals had been teachers, the principals had more immediate knowledge and took an active role in curricular planning and teaching. Their contacts with teachers about daily matters were informal and personal. In large schools principals relied on vice-principals and department chairpersons to report on the curricular planning and teaching. In large districts principals described themselves as carrying out district policies and managing schools by delegating curricular responsibility to others, particularly those with more years of experience at the school. The role taken by these principals was managerial rather than instructional because of the size and complexity of the schools they administered.

The principals in the Paths' schools were in their schools a significantly shorter time than the other school staff members. The mean number of years for principals at Paths' schools was 6.7 years, but the range was from one to 28 years. Table 6 shows the number of years at the schools for principals, vice-principals, counselors, and department chairpersons.

The assumption that high school principals typically serve as instructional leaders in the same sense as

Table 5

Departments in the 26 Paths' Schools

Department	*Number of Paths' schools*	*Department*	*Number of Paths' schools*
English	24	Art	17
Mathematics	24	Home economics	11
Science	24	Agriculture	4
Social studies	24	Health and safety	3
Foreign language	24	Proficiency, basic skills, reading	3
Physical education	24	Consumer and family studies	4
Business	21	Combinations (e.g., mathematics/science, humanities)	7
Fine or performing arts	12		
Music	11		

do elementary school principals seems questionable. High school principals manage highly complex organizations, have varying involvement with curricular decisions, delegate much of this responsibility to other significant site personnel, and are often far less established at the school than are the personnel. In reform efforts aimed at high schools, consideration should be given to extending the concept of instructional leadership to include department chairpersons and other significant school personnel.

Variations in School Characteristics

Schools vary internally and from each other in an overwhelming array of different and changing sizes, mixes of students, and curricular traditions. Some of these will be described briefly to indicate why curriculum is not often (or easily) determined and coordinated at the school level or higher.

Table 7 shows how the 26 Paths' schools compare on a number of important variables. Each variable listed has implications for school-level curricular policies and management.

School size and grade levels. Using the number of twelfth graders as a measure of school size, enrollment in the schools of the study ranged from 26 to 934 students. The size of a school determines the number of different courses that can be offered. Twelve of the schools reported declining enrollment, three reported increasing enrollment, seven reported steady enrollment, and four had inconsistent changes over the past few years. They had grade-level structures of seven through twelve, nine through twelve, or ten through twelve.

Achievement and socioeconomic status. The Paths' schools ranged from the sixth to the ninety-ninth percentile of CAP achievement across the state. The achievement levels and range of students in a school determine the range of content, level, and pace of courses that must be offered to meet the students' needs. Schools that serve students with a wide range of achievement levels must have wide arrays of courses; conversely, schools in which students are more alike can target their efforts toward a narrower range of achievement. Most schools serve students who have a wide range of achievement levels.

One of the Paths' schools (i.e., School 2) had half of its students in the top quartile of students in the state. Some Paths' schools (i.e., schools 14 and 19) had over 40 percent of their students in the lowest quartile in the state. The educational tasks facing these kinds of schools were very different. Statewide, only five schools had over half of their students in the top quartile. Thirty schools had less than 10 percent of their students in the top quartile. Most schools served the full range of students, approximately distributed across quartiles. Therefore, each of these schools was required to provide courses at the highest and lowest achievement levels.

The socioeconomic status measure used in the study was the parents' educational level, which was asked of twelfth graders on the CAP test. This measure correlated extremely high (r = .75) with the reading achievement mean score for schools. Parents' educational levels have implications for community involvement and curricular expectations as well as for the postgraduation destinations anticipated by students.

Ethnic minority enrollment and limited-English proficiency. Many schools have students from different ethnic groups. The students' basic skills and English proficiency are the primary factors that affect the curriculum offered by a school. The existence of different ethnic groups and limited-English-proficient students poses problems for school management and curriculum in terms of cultural and language differences. The greater the diversity, the greater the need for carefully planned and appropriately designed programs of study.

In addition to the total minority population at each school, there is great variation in the number of ethnic groups and the proportions of each group within the schools. Statewide, there are very few high schools with only one predominant ethnic minority group. The proportions of ethnic group students in the Paths' schools are shown in Table 8.

Even this breakdown does not capture the true diversity of students. Within an ethnic category, educational approaches needed for Hispanic immigrants with no English skills are different from those needed for second-generation or third-generation California-educated Hispanic residents. Similarly, those categorized in the Asian population include all socioeconomic and achievement levels, with a variety of linguistic backgrounds. The proportions of limited-English-proficient (LEP) students in the Paths' schools are listed in Table 7.

Table 6

Years in Position of Key Administrative Staff Members in the 26 Paths' Schools

Position	*Mean years at the school*
Principal	6.7
Vice-principal	11.9
Counselor	13.0
English department chairperson	15.2
Mathematics department chairperson	13.7
Science department chairperson	15.5

Table 7

Characteristics of Paths' Schools, 1981-82

Paths' school	Total district enrollment	Number of twelfth graders in Paths' schools	School community type*	Parents' educational level**		Ethnic minority		LEP percent‡	California Assessment Program (CAP)			
				School mean	Percentile rank†	Percent‡	Percentile rank†		Reading percentile rank†	Comparison scores***		Math percentile rank*
										Reading	Math	
1	14,103	552	S	2.9	53	33.8	59	8	44	W	W	48
2	9,288	506	S	4.3	98	13.5	27	0	99	A	A	99
3	26,590	626	S	3.6	92	8.0	12	0	91	W	A	95
4	914	26	R	2.4	18	35.3	62	0	69	A	A	78
5	12,932	497	S	2.8	41	28.4	54	16	57	A	A	55
6	10,867	661	S	3.5	84	34.4	61	15	87	A	A	93
7	21,510	430	S	2.6	25	72.4	89	4	18	B	W	28
8	9,231	458	R	2.4	18	49.0	74	5	16	B	A	35
9	5,651	387	S	2.9	52	47.4	73	20	40	B	B	30
10	32,877	163	U	2.8	40	67.0	86	9	27	W	W	32
11	14,372	279	S	3.4	84	12.4	24	0	93	A	A	90
12	44,965	350	S	3.3	7[illegible]	13.5	27	1	60	W	B	49
13	7,765	324	S	3.6	92	35.8	63	7	71	B	W	88
14	47,585	483	U	2.4	19	99.4	98	0	6	W	W	3
15	530,888	678	S	2.8	42	46.6	72	6	43	W	A	59
16	3,476	384	S	3.5	88	25.2	[illegible]	-	88	-	-	85
17	57,264	460	U	2.7	37	47.4	73	1	13	B	B	10
18	109,442	934	S	3.5	84	27.6	53	9	7[illegible]	W	A	94
19	58,371	347	U	2.6	29	91.2	96	22	5	B	B	12
20	627	128	R	2.6	31	13.0	26	0	49	W	W	35
21	15,293	440	U	2.7	39	42.1	68	1	23	B	B	22
22	9,606	370	S	3.5	87	18.5	37	1	85	W	A	93
23	9,556	532	S	3.6	89	21.0	41	5	84	W	W	85
24	3,386	49	R	2.6	32	10.0	19	0	63	A	W	32
25	5,330	224	S	3.5	88	18.9	38	3	91	A	B	60
26	10,281	250	R	2.4	17	12.7	25	0	32	A	A	27

*School community: R = rural; S = suburban; U = urban

**Parents' educational level (CAP): 1 = not a high school graduate; 2 = high school graduate; 3 = some college; 4 = college graduate; 5 = college plus.

***Comparison scores (CAP): W = within expectancy; A = above expectancy; B = below expectancy.

†Percentile rank is a statewide rank.

‡Percentile of total students in school.

A final factor that affects school planning is the rapid change in ethnic populations at each school. Stability was the exception rather than the rule in the Paths' schools. Most reported changes in enrollment with increasing minority populations, particularly Hispanic, Vietnamese, Laotian, Taiwanese, and Pacific Islander students. To provide curricula in all academic areas for such a variety of students was a difficult task for each department in the school.

Department-Level Policies and Practices

Although curriculum can (and should) be planned and coordinated across the school, the department-level unit in the secondary schools focuses on one area of study and develops the courses, sequences, standards, and access criteria for courses in that area. Departmental decision making is closest to the classroom and individual teacher in the hierarchy described in Figure 2 and therefore has great potential for affecting the success of policies set at higher levels. Each academic department studied coordinated and assigned levels and content of courses for the various cohorts of students. The importance of the parameters set at the department level is discussed in Chapter Three.

Department chairpersons were able to play a pivotal curricular and instructional leadership role in high schools. School-level administrators in the Paths' schools were seldom reported to have such roles. Instead, they utilized others (e.g., department chairpersons and teachers) to fulfill these roles. Curriculum supervisors at the district level were not mentioned by those interviewed about curricular policies and practices. However, the interview questions did not specifi-

Table 8

Proportions of Ethnic Group Students in Paths' Schools

	Ethnicity percentages					
Schools	*White*	*Hispanic*	*Black*	*Asian*	*American Indian*	*Filipino*
1	66	16	2	9	1	6
2	87	2	5	6	0	0
3	92	4	0	3	0	0
4	65	4	0	0	31	0
5	72	23	3	2	1	0
6	66	16	2	12	1	3
7	26	34	19	12	1	6
8	51	43	5	1	0	0
9	52	14	12	7	0	14
10	33	58	2	5	0	1
11	88	5	3	3	1	1
12	87	7	3	2	1	0
13	64	7	23	5	1	1
14	1	1	99	0	0	0
15	53	33	8	4	1	1
16	75	10	3	9	0	3
17	53	14	27	5	1	1
18	72	7	11	9	0	0
19	9	24	39	7	0	22
20	87	13	0	0	0	0
21	58	19	19	3	1	0
22	82	5	1	2	0	1
23	79	16	2	3	0	0
24	90	6	0	0	4	0
25	81	12	5	1	0	1
26	87	6	2	1	3	0
Means: Paths	64	15	11	5	2	1
Statewide	66	19	8	5	2	2

cally mention district curricular or supervisory personnel.

Teacher-Level Policies and Practices

Individual teachers were reported to plan and modify their courses to fit within the following three constraints:

1. Curricular decisions made at other levels (requirements, course sequences, resources, materials, and time)
2. The characteristics of students enrolled in each course
3. The skills, abilities, and interests of the teachers themselves

Teachers are the ultimate implementers of curricular decisions made at other levels. They have varying degrees of autonomy and responsibility for what is taught. In some schools teachers were reported to have complete autonomy over course content, pace, expectations, materials, assignments, and so forth. In others, there were attempts to coordinate such decisions at the department level, making them more consistent and clear to students.

Teachers reported that changing enrollments, absenteeism, and high transiency rates made planning courses difficult. Although students are commonly grouped according to achievement and/or interests, the mean and range of achievement within a class can shift from year to year as well as during the year. Teachers reported adjusting their courses and expectations according to each class's characteristics, which changed depending on transiency rates. With limited ability to monitor and predict which students would be in a class over a period of time, teachers reported the need for organizational support to build a coherent educational experience for students.

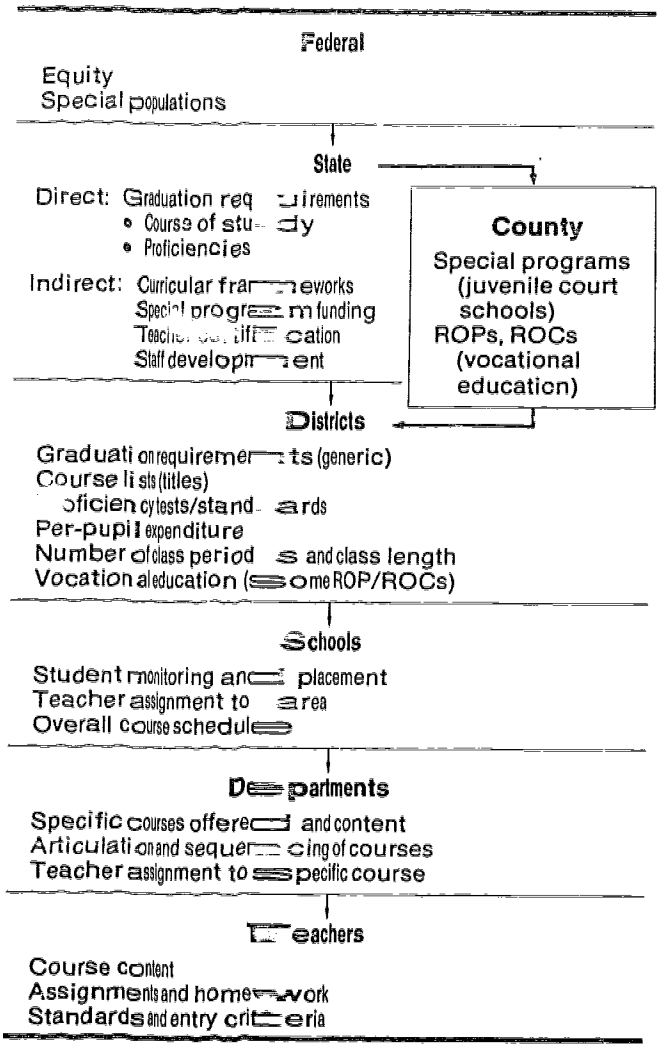


Fig. 2. Secondary curricular policymaking levels in California

CHAPTER TWO

Graduation Requirements

Summary

Two important sets of policies that structure and define standards for curricular experiences of California high school students are course of study and proficiency requirements for graduation. Course of study requirements, set by districts, are generic in their effect. The requirements establish a minimal amount of time spent in courses and the exposure students have to various subject areas. The requirements do *not* determine what the content or expectations will be in those courses. The courses that students actually take to fulfill these requirements were found to vary greatly within—as well as across—the schools studied.

Course of study requirements ranged from 170 to 235 units in the Paths' schools. Requirements were stated in various forms, and the commonly used "unit" varied in meaning. Differences in the length of class periods, from 45 to 55 minutes, resulted in a unit that represents significantly more instructional time required for graduation in some schools than in others.

The required units differed in allocation across content areas. For comparison, the units were grouped into specified academic, specified nonacademic (e.g., physical education, drivers' education), and elective categories. The academic units required represented less than half of the total needed to graduate. Various courses within each area could be taken to fulfill these requirements, since few specific courses were required of all students. Therefore, students' programs of study varied in which courses they took to fulfill the academic unit requirements. Nearly half of the program requirements were electives. Differences in student programs increased with their selection of academic or nonacademic courses to fill elective requirements.

Proficiency requirements were more specific in their impact on the lowest achieving students. The requirements were reported to have redirected attention and resources to these students, and necessary resources reportedly were taken from elective courses rather than from advanced-level courses. The specific impact was the creation of courses to enable students to attain basic skills and pass the proficiency tests. Curricular resources had to be allocated across the range of courses and achievement levels in a school. The results of the proficiency tests indicated that the curriculum should concentrate on the lowest achievement cohort, reducing course offerings at the middle levels. The study found the most limited range of courses in schools with the widest range of students' skills.

Course of Study Requirements

To graduate from California comprehensive high schools, students must (1) complete the course of study requirements; and (2) pass the proficiency tests in reading, writing, and mathematics. Both types of requirements are set at the district level. Each district determines the type of courses to offer students and the minimum competencies to be expected. The course of study requirements do not specify which courses students must take, but they do specify some areas within which students must complete some units of coursework. In addition to specifying a particular distribution of units or courses by subject area, course of study requirements include additional courses called electives. Thus, to complete the required distribution, students choose electives to fulfill the total unit requirement.

Current course of study requirements are set by districts within broad guidelines from the state. An interesting finding in the Paths' interviews was the lack of accurate understanding of these program requirements by local educators. Many school administrators and teachers who were interviewed were convinced that the state standardizes the curriculum by specifying a number of units, specifying particular courses for graduation, defining the unit of academic credit, or requiring certain textbooks. For example, several of the study schools offered a course entitled "State Requirements," which usually refers to civics, drivers' education, health, or safety education. In response to a request for the definition of credit used by the school, many respondents replied that their school conformed to the state-stipulated definition of credit. (There is no such definition.) Many people who were interviewed thought that the state defined the content of academic courses. For example, curricular vice-principals and department heads, who might be expected to be familiar with the curriculum, frequently explained the content of mathematics, English, and science courses as being required by the *Education Code.*

Several reasons can be offered for these pervasive misperceptions. The *Education Code* (at the time of data collection) specified broad areas of academic knowledge and some topics within these areas for inclusion in each school's curriculum. In addition, the state publishes and distributes curriculum guides to assist districts in their academic planning. Each of these reasons could support the widespread and commonly held assumption that most students are taught the same material.

The state course of study graduation requirements at the time of data collection (1982), as specified in the *Education Code,* were as follows:

> 51222. (a) All pupils, except pupils excused or exempted pursuant to Section 51241, shall be required to attend upon the courses of physical education for a total period of time of not less than 400 minutes each 10 schooldays. Any pupil may be excused from physical education classes during one of grades ten, eleven, or twelve for not to exceed 24 clock hours in order to participate in automobile driver training. . . .
>
> 51225. No pupil shall receive a diploma of graduation from high school who has not completed the course of study prescribed by the governing board. Requirements for graduation shall include:
>
> (a) English.
> (b) American history.
> (c) American government.
> (d) Mathematics.
> (e) Science.
> (f) Physical education, unless the pupil has been exempted pursuant to the provisions of this code.
> (g) Such other subjects as may be prescribed.
>
> The governing board, with the active involvement of parents, administrators, teachers, and students, shall, by January 1, 1979, adopt alternative means for students to complete the prescribed course of study which may include practical demonstration of skills and competencies, work experience or other outside school experience, interdisciplinary study, independent study, and credit earned at a postsecondary institution. Requirements for graduation and specific alternative modes for completing the prescribed course of study shall be made available to students, parents, and the public.
>
> 51227. Instruction in social sciences shall include the early history of California and a study of the role and contributions of both men and women, black Americans, American Indians, Mexicans, Asians, Pacific Island people, and other ethnic groups to the economic, political, and social development of California and the United States of America, with particular emphasis on portraying the roles of these groups in contemporary society.
>
> 51260. Instruction shall be given in the elementary and secondary schools on drug education and the effects of the use of tobacco, alcohol, narcotics, dangerous drugs, as defined in Section 11032 of the Health and Safety Code, and other dangerous substances. . . . In grades 7 to 12, instruction on drug education shall be conducted in conjunction with courses given on health or in any appropriate area of study pursuant to Section 51220. . . .

Comparison of Requirements

Districts describe their course of study requirements in different formats. These can be stipulated as a number of units, a number of years in courses, or as

specific courses. Districts usually use more than one format, specifying, for example, one or two courses in conjunction with required course hours and units in subject areas.

The most consistent measure used by the schools studied was called the "Carnegie" unit. School administrators were asked to define this unit, and they did so in terms of class time. One class period per day, five days per week for one year (two 18-week semesters), equaled ten units of credit in most of the schools. A student taking five courses a year accumulated 50 units each year, totaling 200 units in four years; a student taking six courses a year accumulated 240 units in four years.

Despite the common use of a "unit" of credit by the schools, students are exposed to different amounts of class time in earning these units. Length of class periods in Paths' schools varied from a minimum of 45 minutes to a maximum of 55 minutes, with a mean of 51 minutes. Students who had divergent amounts of contact time received the same units of academic credit. These differences, as they accumulate over a semester, are illustrated in Table 9.

Total units required. The total number of units required for graduation varied significantly across the Paths' schools, ranging from 170 to 235 units, with a mean of 209 units. The range of 65 units equaled more than a full year's instruction for students taking five classes per day. Thus, graduating seniors from one school may have completed over a year's worth more coursework than did seniors from another school.

Course of study requirements across subject areas. Districts required varying amounts of coursework in certain subject areas. The distribution of units in the most commonly required areas is shown in Table 10.

Comparing the requirements in each area with the elective units clearly indicates the importance of the choices students make to complete their unit requirements. The units required in specific areas and as electives are compared in Figure 3.

To determine the extent to which students take a common core of courses to graduate, the interviewers asked about specific courses required of all students. Few specific courses were required of all students (less than four per school). Forty-two percent of the

Table 9

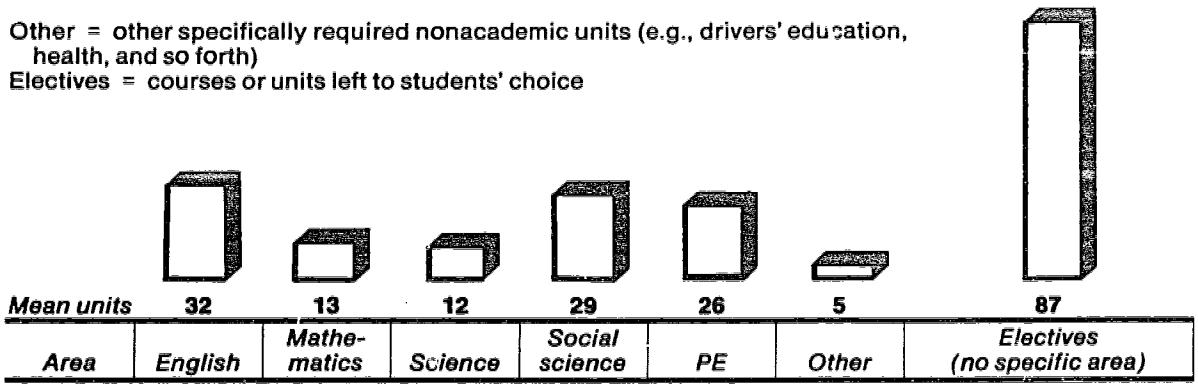
Comparing Length of Class Period by Semester

Time being compared	*Minutes of student/instructor contact time*			
	Mean	*Maximum*	*Minimum*	*Difference*
Class period	51	55	45	10
Semester	4,590	4,950	4,050	900

Table 10

Number of Units Required in Paths' Schools

Department	*Mean*	*Minimum*	*Maximum*
English	32	20	40
Mathematics	13	10	20
Science	12	7	20
Social studies	29	20	40
Physical education	26	10	40



Source: Paths Through High School Study

Fig. 3. Mean course of study requirements, by area

required courses were nonacademic, such as consumer education and physical education. Of the specifically required academic courses, the majority were civics, U.S. government, or U.S. history courses offered by the social studies departments. Mathematics and science courses were required generically but never by specific course title. Required English courses were only rarely specified by course title.

Academic and nonacademic course of study requirements. A comparison of the types of academic and nonacademic instruction required to graduate is shown in Figure 4.

Academic area requirements included courses offered in the English, mathematics, science, and social studies departments. No school required a foreign language. Academic courses fulfill elective requirements once the required units are completed. Therefore, since most high schools required 30 units or three years of English, students who completed four years of English accrued ten academic elective units. Nonacademic work referred to courses in departments such as fine arts, practical arts, or physical education. Only two Paths' schools required fine arts units; three schools required practical arts units. All schools required physical education units, ranging from 10 to 45 units.

A comparison of the mean academic, specified nonacademic, and elective units required in the study schools is shown in Figure 5.

The differences in the total units required and the proportions of academic, nonacademic, and elective courses in each of the schools studied are shown in Figure 6. When compared in this way, it can be seen that coursework required in academic areas is composed of less than half of the total.

Requirements for Graduation

To illustrate the differences in curricular experiences that students had while completing current course of study requirements, students' transcripts were analyzed in Paths' School 9, where 230 units were required for graduation. About one-third of the required units were to be selected from within academic areas and one-half were elective. School 9 required the same English courses for all ninth graders, and 20 units of agricultural science could have been substituted for the ten required science units. The distribution of course of study requirements in

Type of instruction	*Specific requirements*		*Electives*
	Areas	*Examples of courses*	
Academic	English Mathematics Science Social studies	Civics U.S. history U.S. government	Students' choice
Nonacademic	Fine arts Practical arts Physical education	Drivers' education Safety education Health education Swimming	Students' choice

Fig. 4. Division of program requirements

Courses	*Units required*		
	Mean	*Minimum*	*Maximum*
Academic	86	60	110
Nonacademic	33	15	60
Elective	92	60	125

Source: Paths Through High School Study

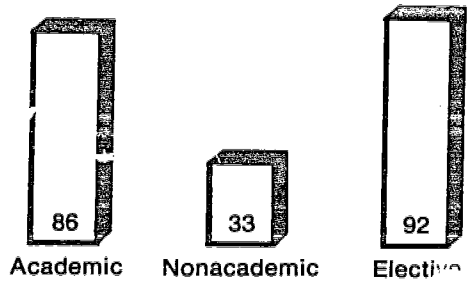


Fig. 5. Comparison of the academic, nonacademic, and elective mean units required for graduation

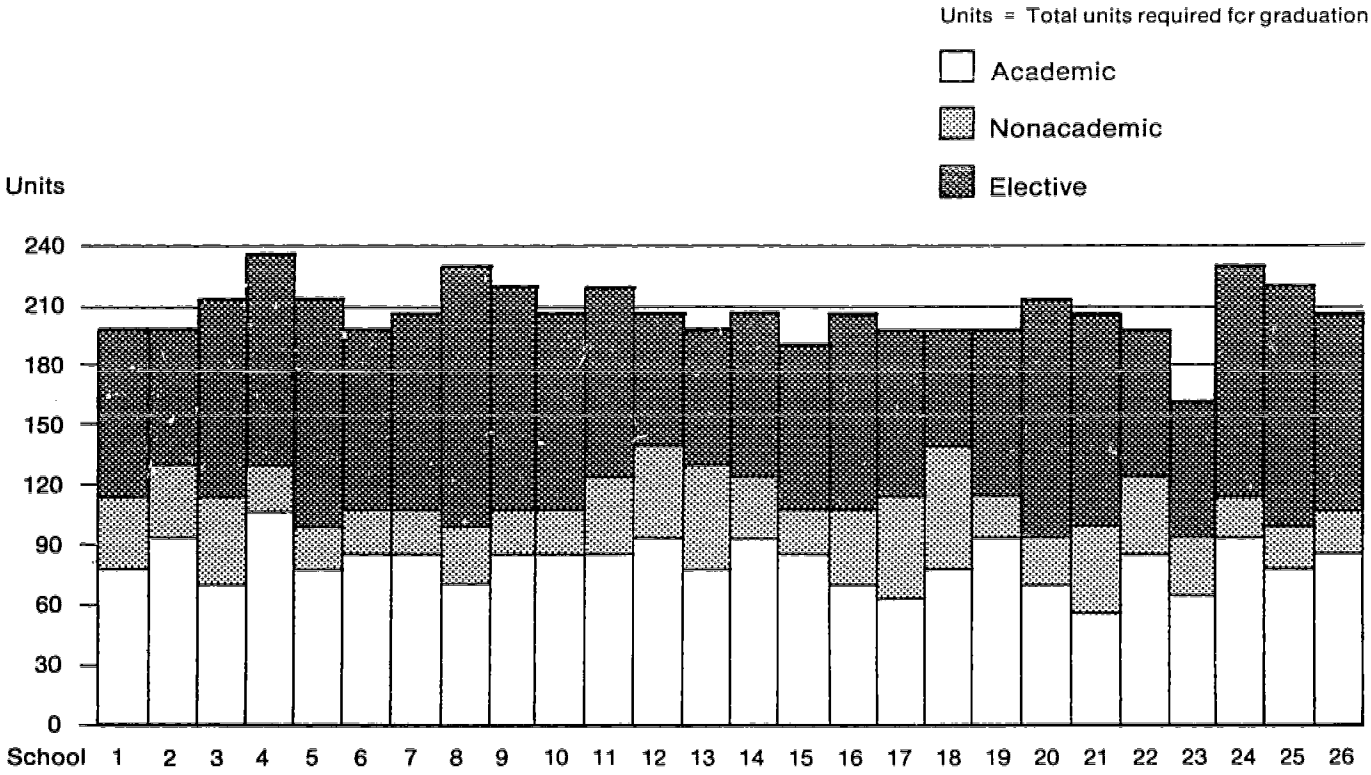
School 9 is shown in Figure 7. The ways in which three students fulfilled these graduation requirements are shown in figures 8, 9, and 10. The courses taken by these students during four years of high school are given in Appendix B.

Students A, B, and C graduated from School 9 in the same year. Their programs do not show much variation in the number of units accrued compared to those required for graduation because, of the Paths' schools, School 9 required one of the highest number of units to graduate. However, the three students varied in the proportion of academic units taken.

During the four high school years, Student A (Figure 8) completed the minimum of 80 academic units, the 30 nonacademic units, and chose 120 units of nonacademic electives. Sixty-five percent of this program was in nonacademic units of study, including 25 units of work experience. Unfortunately, the program breakdown into academic versus nonacademic courses masks the vocational orientation (Foods and Restaurant Management), which is more apparent from the course listing (see Appendix B). Despite this masking effect of the table's format, Student A's program can be interpreted to be determined by minimal expectations—the minimum numbers of units, the minimum academic units, and the minimal nonacademic electives.

Student B's course selections (Figure 9) reflect a vocational orientation, but the agricultural program appears more developed than Student A's home economics program. Twenty units of agricultural science were taken by Student B to meet the science requirements and support the basic agricultural skills, such as maintaining farm equipment and feeding livestock.

Student B exceeded minimal standards by taking 5 units more than those required to graduate and by choosing 12.5 units of academic electives. Forty-three percent of the program was academic coursework. For the most part, however, the distribution of the academic and nonacademic components of this program, like Student A's, was defined by the minimal academic requirements for graduation. What distinguishes Student B from Student A is the content of the academic courses. While Student A enrolled in an introductory year of a two-year algebra sequence, Student B took regular algebra and geometry. To meet the English requirements, Student B chose courses such as the short story, creative writing, American literature, and advanced grammar; Student



Source: Paths Through High School Study

Fig. 6. Distribution of requirements in academic, nonacademic, and elective areas in Paths' schools

A took language skills, a basic course, for four semesters.

Student C's program, Figure 10, provides the greatest contrast. Student C took a few more credits, but most importantly, 68 percent of the coursework was done in academic departments with 80 units of academic electives. There was no vocational program implicit in the choices of nonacademic electives, and there were only ten units of work experience. The completed courses included ones specifically labeled as college preparatory (e.g., biology in grade ten or writing in grade twelve), as well as courses such as chemistry, Shakespeare, and three years of Spanish, which suggest an intention to go on to college.

Students take very different courses to graduate from high school. Course of study requirements set the exposure time within academic areas, but not the content to be learned. Thus, these requirements may be termed "generic" in that any course offered within a subject area may be taken to fulfill the area of elective requirements. As will be described in subsequent chapters, however, students' programs of study are not randomly selected. The actual courses taken are determined through the curricular planning processes at each school, primarily at the department and teacher levels. It is at these levels that generic course of study requirements are made specific.

Proficiency Requirements

Proficiency requirement policies are a mechanism by which external leverage has been placed on schools to ensure that all districts set minimum performance levels for basic skills. Proficiency assessment was mandated by the Legislature in 1976 to ensure that no student would graduate from high school without achieving minimal competency levels in the basic skill areas of reading, writing, and mathematics.

Like course of study requirements, proficiency standards are different across California's school districts. Each district is required to establish standards that all students must meet prior to being awarded a diploma. Locally set standards are intended to match the expectations of the teaching staff and the community. Districts develop or purchase tests, set pass-

Type of course	*Specified (48%)*		*Elective (52%)*
	Areas	*Courses*	
Academic 80 units	English (20) Mathematics (10) Science (10) or agricultural science (20) Social studies (20)	English 1-2 (10) Civics (5) State requirements (5)	
Nonacademic 30 units)	Physical education (30)		
Total	110 units	20 units	100 units

Fig. 7. Course of study requirements at Paths' School 9 (230 units)

Type of course	*Specified (48%)*		*Elective (52%)*
	Areas	*Courses*	
Academic 80 units (35%)	English (20) Mathematics (10) Science (10) Social studies (20)	English 1-2 (10) Civics (5) State requirements (5)	
Nonacademic 150 units (65%)	Physical education (30)		Home economics (52.5) Business (10) Art (5) Music (20) Physical education (7.5) Work experience (25)
Total	90 units	20 units	120 units

Fig. 8. Student A's program of study (230 units)

ing scores, and establish testing and remediation programs.

Proficiency standards appeared to have a negative impact on fewer students than course of study requirements do. More seniors who failed to graduate from Paths' schools in 1981 did so because they failed to complete course requirements than because they failed to meet proficiency requirements. The relative impact of course of study requirements and proficiency testing on graduation rates in Paths' schools is displayed in Table 11.

Effects of Proficiency Requirements

A quarter of the Paths' schools reported no curricular change or only minimal administrative modifications as a consequence of proficiency requirements. Nineteen schools reported changes that involved adding new remedial courses, tutorials, or extra sections to the existing mathematics and English courses. Almost a third of the Paths' schools reported a general refocusing of curricular concern and use of resources toward remedial courses and low achieving students.

While less academically oriented students may be receiving increased attention, there is some evidence that higher achieving students are receiving somewhat less attention. Proficiency assessment was mandated by the state without increased funding (except for special summer school and parent notification costs). Thus, to increase the number of courses for the lowest achieving students, schools had to reallocate available resources. Solving this problem had been a serious concern, and some educators assumed that the upper end of the curriculum (i.e., advanced academic courses) would be affected the most.

Generally, this was not found to be the case. There were a few exceptions, however. Four schools reported increasing the size of upper-level classes and dropping electives. Two of the schools that experienced a shift of concern away from the more academic students

Type of course	*Specified (51%)*		*Elective (49%)*
	Areas	*Courses*	
Academic 102.5 units (44%)	English (20) Mathematics (10) Agricultural science (20) Social studies (20)	English 1-2 (10) Civics (5) State requirements (5)	Mathematics (12.5)
Nonacademic 132.5 units (56%)	Physical education (30)		Industrial arts (20) Agriculture (25) Business (10) Physical education (7.5) Work experience (40)
Total	100 units	20 units	115 units

Fig. 9. Student B's program of study (235 units)

Type of course	*Specified (46%)*		*Elective (53%)*
	Areas	*Courses*	
Academic 160 units (68%)	English (20) Mathematics (10) Science (10) Social studies (20)	English 1-2 (10) Civics (5) State requirements (5)	Mathematics (20) English (15) Social studies (5) Science (10) Foreign language (30)
Nonacademic 75 units (32%)	Physical education (30)		Business (10) Music (15) Physical education (10) Work experience (10)
Total	90 units	20 units	125 units

Fig. 10. Student C's program of study (235 units)

Table 11

Graduation Rates in Paths' Schools (1981)

Outcome of graduation requirements	*Mean, percent*
Graduating	94.4
Not graduating	5.6
Passed courses, failed proficiency tests	0.7
Passed proficiency tests, failed courses	3.4
Failed courses and proficiency tests	0.9

perceived it as timely and appropriate. The effect of the change on more academically oriented students does not appear to be detrimental to their curricular progress. Although some electives may have been dropped, there were no reports of courses being eliminated from the more advanced curricular sequences (e.g., fourth-year English, mathematics, or science).

A number of forces in each school served to maintain the advanced academic courses within the limits set by the number of students enrolled and their achievement levels. Students enrolled in these courses were not likely to be reenrolled in proficiency remediation if the advanced courses were dropped, so there was no direct reason to exchange these course resources. Maintaining strong college preparatory course sequences is important for a school's image, both internally and within the community. College preparatory courses are the hallmark of excellence and demonstrate most clearly that desirable goals are being maintained and achieved. School administrators point to their advanced academic courses with pride. Teachers feel an obligation to offer courses that would enable students (even if only a few) to go to prestigious colleges. While teachers like teaching their "own" electives (i.e., courses they developed), they also prefer more advanced content over lower-level courses and higher achievement levels to lower.

Most schools reported that curriculum erosion or change over the past years (not necessarily due to proficiency remediation) was greatest in the electives that could be offered. These electives included academic and nonacademic courses but represented specialized content such as foreign languages, oceanography, the short story, music appreciation, and homemaking. These courses could be sustained only with adequate enrollment and staffing; when reallocations were made, they were the first to be eliminated.

In schools where proficiency requirements had had an impact, that impact had been on the lowest achieving students. While graduation requirements defined the minimum curriculum, the proficiency standards identified students who had not attained minimal levels of reading and mathematics skills and served to rechannel concern and effort toward the remediation of low achieving students.

As described in Chapter One of this report, high schools are faced with great differences in the characteristics of incoming students. A wide array of courses and sequences of courses must be provided to meet the needs of diverse students. The pressure to provide courses at the lowest as well as highest achievement levels leads to trade-offs in allocation of resources and attention to various levels. The broader the range of students being taught, the less depth can be offered at each level.

In the event that resources are limited, when the range of student achievement and course levels increases, electives are eliminated in an attempt to cover the range. Schools with narrower ranges of achievement can offer more courses at each achievement level.

Reports about proficiency assessment and its effect (e.g., *Statewide Summary of Student Performance on School District Proficiency Assessments,* 1985) are available from the Department of Education.

CHAPTER THREE

Curricular Structure

Summary

High school courses are differentiated to group students homogeneously and focus content according to the students' achievement levels and destinations. Educators use various terms in referring to the grouping of students; for example, streaming, laning, or tracking. In this report the process is referred to as tracking.

All Paths' schools tracked students in the English, mathematics, and science departments. The schools in the study reported planning courses and sequences for two to five tracks, excluding special education, compensatory education, and bilingual programs. Departments within the same school established their own criteria for grouping and had different numbers of tracks. For purposes of comparison, the most commonly found tracks within the Paths' schools can be described as GATE (gifted and talented education), college preparatory, general, and lower tracks. GATE and college preparatory tracks were often combined for simplicity since many courses in these tracks had the same titles and all were college preparatory. Most of the schools had vocational educational departments, but vocational education was not typically reported as a track.

Analyses of curricular maps describing the tracks indicated how students received different kinds and amounts of content in their high school coursework. The students' course paths followed the curricular structure planned by each department and resulted in different courses and content for each cohort of students.

Tracking: An Organizational Response to Students' Diversity

The differences experienced by students in their coursework taken to graduate (described in Chapter Two) can be partly explained in terms of the organization of curriculum by schools. Most of the differences in course paths constructed by students are systematic, resulting from the course planning and placement processes. Each cohort entering high school includes students at a wide range of ability and skill levels, with different expectations and intentions for their postgraduation futures. High schools differentiate their curriculum into several tracks, streams, or lanes to divide the students into homogeneous groups for instructional purposes—a process referred to here as tracking. The content of the curriculum to which a student is exposed depends on the track to which that student is assigned.

Tracking is a complex organizational system that has both structural and procedural features. The structural component, differentiated curriculum, is

the subject of this chapter. The procedural component, placing students in various course sequences, is the subject of Chapter Four. As described here, tracking refers to the organizational handling of a diverse population of students. Tracking differentiates courses and students, matching skills and abilities to course content, pace, and expectations. Once students are tracked, they have certain educational experiences (those of the curriculum associated with their track), and they are not exposed to other experiences.

School personnel did not readily state their tracking policies and procedures, and tracking systems were sometimes difficult for respondents to describe. The term "tracking" was not used comfortably by some respondents because it is closely associated with policies of discrimination or inequity. Tracking sometimes implies an unalterable course path to a fixed destination, and this definition is not compatible with the egalitarian ideology of public education. Respondents often selected less loaded terms to describe the school policies, such as "self-tracking" or "career choice."

As used here, in contrast to the pejorative connotation, tracking refers to the organizational processes by which schools develop courses and sequences for different students. Courses and sequences are generally planned to group students into homogeneous achievement groups for academic instruction (for example, separating readers from nonreaders) and to fulfill postgraduation plans, such as college entrance. Tracking that has the effect of isolating students by race or ethnicity is prohibited by law. Tracking in which placement is permanent and cannot be altered by students or parents is also illegal. Such practices, however, are not implied in the definition used here. Tracking systems can be effective organizational procedures for providing appropriate instruction and content for students with different skills and aspirations.

Another factor contributing to the difficulty of explaining tracking policies is the effect of organizational roles on the perception of tracks by school personnel. In general, department heads and teachers, who are most closely involved in the actual process of creating courses and sequences, proved to be the most informative. Administrators and counselors in their nonteaching capacities often avoided mentioning tracking and focused on students' choice as the major determinant of curricular experiences in high school.

Tracking Systems

Although some respondents were reluctant to call their practices tracking, curriculum differentiation or tracking systems were found in all Paths' schools. Each school had its own system for differentiating the curriculum, and many labels were used for the same organizational phenomenon. Some schools assigned alphabetic or numeric codes to the courses within a track, others distinguished tracks on the basis of students' intended postgraduate destination, and a few schools characterized the track by the content of the track itself. In the Paths' schools, curriculum materials and interview responses indicated between two and five tracks (excluding students in programs such as special education, compensatory education, or bilingual education). Four schools reported two tracks, 11 reported three tracks, and 11 reported four tracks.

The four-category scheme in Table 12 is based on an assessment of the relative requirements of the programs within the schools and provides a means to compare tracks across schools. The common names for the different tracks are grouped under each category.

The distributions of students by track can be estimated only roughly because each school had a unique tracking system. The range of the student population assigned to the tracks (Table 13) reflects the different tracking structures as well as the diversity of students within each of the Paths' schools. Since each tracking system was unique, it was difficult to determine the average percentages in each track. About 10 percent of the students in the study schools were in a GATE track, about 35 percent were in a college preparatory

Table 12

Tracks Within the Paths' Schools

Upper track	*College preparatory track*	*General track*	*Lower track*
Honors	Academic	Nonacademic	Remedial
Advanced placement	University	College interest	Remedial transition
GATE	University of California	Community college	Terminal
Gifted	College	Regular	Development
Level 300	State university	Precollege	Basic
H Lane	College bound	Vocational	Level 50
	Level 200	Level 100	C Lane
	A Lane	B Lane	

track, about 45 percent were in a general track, and about 20 percent were in a remedial or lower track (these figures do not total 100 percent because some schools do not use the four categories of tracks discussed here).

Most schools distinguished between lower-track students and general-track students, although one school merged these categories. Five Paths' schools separated college preparatory from general-track students, while three schools combined students with those in college preparatory sequences.

Vocational education was not identified as a distinct category because only four schools reported its presence as a track. Twenty-four Paths' schools offered industrial, domestic, or vocational arts courses, but these were not developed as separate tracks in academic areas. Instead, they were elective courses.

Tracking Criteria

Tracking systems are implemented by using policies or procedures determined at the district, school, and department levels. Often the schools set broad policies, which are worked out in detail at the departmental level. School-level policies differentiate students into general categories, and specific course sequences are developed by departments. All the Paths' schools used achievement measures, students' postsecondary plans, and teachers' recommendations as the primary grouping criteria. Schools were found to use different specific forms of these criteria, such as:

- Grades from earlier years
- Results of *Comprehensive Tests of Basic Skills (CTBS)* or other standardized achievement tests
- Results of proficiency tests

Each academic department in a school set the criteria for initial course placement and for continuing in a sequence of courses. When the criteria were content specific, such as achievement in mathematics, some students were in different tracks in different subjects. For example, a student might be enrolled in college preparatory English and general mathematics. Often, however, placement was based on basic skills, such as reading levels, and the students were in the same track across content areas. This practice was justified by school personnel as necessary because of the importance of reading skills to instructional methods.

Teachers set the criteria for determining whether a student should remain in a course or move on to more advanced work. Some departments and schools coordinated or standardized criteria and courses through various mechanisms, primarily textbooks, scope and sequence descriptions, and tests. However, the specific topics covered, pace, expectations, grading, and homework were determined by teachers for each course. Since course plans were reported to be modified in response to the particular characteristics of each class of students, courses varied considerably in how they prepared students for subsequent work. Teachers complained that students may not have the skills and knowledge expected, even after successfully completing courses listed as prerequisites.

Course Content

The actual content of courses offered by a school was primarily determined at the departmental level where teachers made curricular decisions within guidelines established at the district level. The school's administrators or counselors were reported to be rarely involved in curricular decisions other than procedural matters, such as approving a request intitiated by a department or teacher to offer a new course.

The degree to which courses were coordinated within a department or school was found to vary considerably, as was the rationale given to students for the particular courses contained in a sequence. In many cases the traditional college preparatory sequences were offered without any indication of how or why courses might be sequential; e.g., algebra-geometry or biology-chemistry. In a few schools course content and skills were described as they fit together into progressively more advanced work. The rationale and course descriptions in these cases conveyed a clear plan for moving students into courses with higher order content. An excellent example of such course content description is provided on the next page; it was taken from the course catalog of Paths' School 2 in which basic chemistry courses are differentiated.

Table 13

Distribution of Students, by Track, in Paths' Schools

Track	*Percent of student population*
Upper	3—30
College preparatory	15—76
General	25—75
Lower	4—30

Chemistry 1A/Year: eleven-twelve

Suggested course preparation: Completing of Mathematics 2A or 2B with grade B or better. Students should either be taking or have completed mathematics level 3. Chemistry 1A is designed for science-oriented students or liberal arts students who are interested in science. It fulfills the laboratory science requirement for the University of California. The course is divided into ten topics with appropriate laboratory work: (1) atomic theory; (2) chemical reactions; (3) gases, liquids, solids, and solutions; (4) periodic table; (5) atomic structure and chemical bonding; (6) energy involved in rates of chemical reactions; (7) equilibrium in chemical reactions; (8) acid-based reactions; (9) oxidation-reduction reactions; and (10) organic chemistry—structure of carbon compounds.

Approximately one-third of class time is spent in laboratory investigations, which are coordinated with the textbook and are used to reinforce the study of theory. Daily homework assignments involving reading, writing laboratory reports, and solving problems form the backbone of the course.

Chemistry 1B/Year: eleven-twelve

Chemistry 1B is a more practical experience that should appeal to a larger number of students who plan to enter the field of liberal arts. The course will fulfill the laboratory science requirements for the University of California. The course treats chemical concepts in a manner that will be meaningful for the students. Chemistry will be correlated with other related fields. A great deal of emphasis will be placed on laboratory work. Chemistry 1B has five main units: skills development, structure of matter, the periodic table, chemical formulas and equations, and consumer chemistry. The student is expected to do homework on a daily basis and keep an up-to-date laboratory report book. This course is highly recommended for students who plan to enter a nursing or paramedical program after high school graduation. The course is not intended for students who are capable of success in chemistry 1A. Students who have successfully completed mathematics M2 or higher may not enroll in chemistry 1B.

Curricular Maps

Curricular maps are used by departments to describe how the overall curriculum is organized in course sequences for different kinds of students. The maps often are intended for internal use, but some departments distribute maps to students to help them select courses or sequences. Figures 11, 12, and 13 present curricular maps from three departments in different schools that demonstrate the department-level organization of courses available to cohorts of students.

Curricular Map for English

The English curriculum represented in Figure 11 is from School 5, which requires 30 units of English for graduation. The placement of students in one of five programs is dependent on the recommendations of junior high school teachers, test scores, and writing samples. The basic program serves students ranging from nonreaders to those reading at about the fourth-grade level. Available to them are either three years of remedial reading or an English 1–6 sequence. No academic electives in the English Department are generally available to them. Students usually complete only the minimum units required.

The "Y" English program is addressed to students who are reading at two grades below their actual grade level. It is skills oriented, and it includes a wide range of less academic electives, as suggested by the titles of the course offerings.

Students who read at grade level are assigned to the "X" program where they are exposed to a two-year sequence of composition and literature followed by electives. Because students may choose electives from their track or the track just below theirs, "X" students have many more electives to choose from than do "Y" students.

GATE students take an advanced form of composition and literature for three years and then choose from "X" electives in grade twelve or take advanced placement courses.

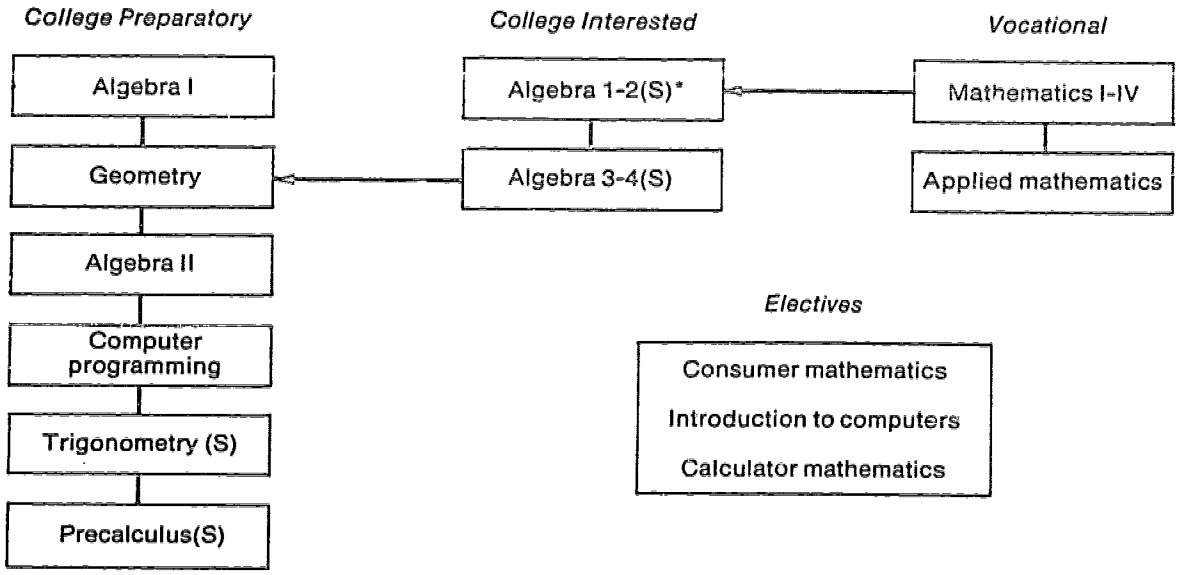
Curricular Map for Mathematics

The curricular map for mathematics shown in Figure 12 is from School 7 where 20 mathematics units are needed for graduation. Placement is based on the students' test scores, teachers' recommendations, and the students' intended postsecondary destinations. Students are allocated to one of three general se-

quences: college preparatory, college interested, or vocational. Vocational students usually take Mathematics I–IV and applied mathematics to meet the graduation requirement and select from two electives that they share with college-interested students. College-interested students most often take a two-year sequence of algebra, after which they can enroll in electives or the geometry courses of the college preparatory program. The usual college preparatory program extends for at least three years and includes the traditional mathematics sequence of algebra, geometry, and trigonometry, followed by a choice of three electives.

Grade	*Basic English*		*"Y" English*	*"X" English*	*GATE*
	Reading level: Nonreader–4.5	*Reading level: 5.6–6.9*	*Reading level: 7.0–8.9*	*Reading level: 9.0 and above*	
9	Remedial Reading	English 1–6 T	English Skills 1–2 Y (two semesters)	Composition/Literature 1–2X (two semesters)	Composition/Literature 1–2 GATE (two semesters)
10	Remedial Reading	English 1–6 T	English Skills 3–4 Y (two semesters)	Composition/Literature 3–4X (two semesters)	Composition/Literature 3–4 GATE (two semesters)
11 and 12	Remedial Reading	English 1–6 T Writing Workshop/Lab	*Electives (below)* American Literature Y Biography/Autobiography Y Developmental Reading Y English Skills Review 5–8* English 1–6 Y Individualized Instruction Y Literature of American Minorities Y Mass Media Y Mystery and Detective Stories Y Mythology Y Science Fiction Y Senior English Y Song Lyrics and Poetry Y Sports Literature Y Techniques/Group Discussion Y Vocabulary and Spelling Y Vocational English Y Writing Workshop/Lab* Your Language Y *Course is recommended for those who do not pass English competency tests.	*Electives (below)* Advanced Composition X American Literature X Beginning Journalism X Beginning Speech Biography/Autobiography X Creative Writing Developmental Reading Drama as Literature X English for College X English Literature X Intermediate Composition X Literature of American Minorities X Literature of the American West X Mass Media X Modern American Literature X Mystery and Detective Stories X Novel X Poetry and Literary Criticism X Science Fiction X Shakespeare X Short Story X Technical Writing X Utopian Literature X Women in Literature X World Literature X Advance Journalism 3-8 8—No English credit Advance Speech—No English credit	Advanced Composition (GATE) English Literature (GATE) *Grade 12* Advanced Placement (optional) Electives from X Program

Fig. 11. Curricular map for English in Paths' School 5



(S) Semester course
*The Algebra 1-2(S) program is a two-year Algebra I course especially designed for those students who would be unable to maintain the pace of a standard one-year course.

Fig. 12. Curricular map for mathematics in Paths' School 7

Category of student	*Freshman year*	*Sophomore year*	*Junior year*	*Senior year*	*Minimum number of years*
Above-average student Grades: B and above	Earth science (RL*= 9), biology (RL=10)	Earth science, biology, chemistry, physics (RL=10)	Chemistry, physics, advanced biology (RL=10)	Chemistry, physics, advanced biology (RL=10)	3
Average or above-average student Grades: C to B (fair to good mathematics background)		Earth science, biology, environmental physics (RL=10)	Chemistry, biology, physics (RL=10), environmental physics (RL=9)	Physics, advanced biology, chemistry (RL=10)	3
Average or below-average student Grades: C to B (generally weak in mathematics)		Life or physical science (RL=6), earth science (RL=9)	Life or physical science (RL=6), earth science (RL=9), biology (RL=10), environmental physics (RL=9)	Earth science (RL=9), biology (RL=10), environmental physics (RL=9)	2
Student generally poor in mathematics and has reading problems		Life or physical science (RL=6)	Life or physical science (RL=6)		1
Above-average student who will take only one science course		Earth science or biology, environmental physics, chemistry, physics (RL=10)	Earth science or biology, environmental physics, chemistry, physics (RL=10)		1

*RL = Reading grade level.

Fig. 13. Map of science curriculum in Paths' School 13

Curricular Map for Science

Figure 13 shows the science curriculum at School 13 where ten units are required for graduation. Placement depends on previous teachers' recommendations, grades, and results of a minimum skills test. Students who read at or below a sixth-grade level and who are generally poor in mathematics choose between life or physical science courses. They are likely to graduate having completed only one of the two courses. Another group of students, those who have low grades and are weak in mathematics, can select from four courses, depending on their reading level, during their sophomore, junior, or senior year. Although students in this category have more choices of science courses than do students who read below grade level, they often do not choose more than the minimum required science units.

Until students are reading at the tenth-grade level or have above-average grades, regardless of their actual year of high school, they do not have access to biology, chemistry, or physics. At this level, students have available seven science courses to select from, those that form the traditional college preparatory sequence. Once embarked on this sequence, the students are reported to take more than the minimum required units because they are concerned about meeting college entrance requirements.

Curricular Paths in Mathematics

Schools use curricular maps to indicate the sequences of courses planned for students. To determine whether students actually follow the planned course sequences, analysts studied transcripts of students from School 8. The course paths taken by students through the mathematics curriculum were found to follow the sequences described in the curricular map. Implementation in the mathematics department apparently matched the curricular planning; that is, students actually took what the department planned.

At School 8 the mathematics department differentiated the curriculum into three tracks that offered alternative routes to completing the mathematics sequence. Numerous paths through the sequence were made available to the students. Figure 14 displays the mathematics tracks as organized by the department: remedial, basic, and college preparatory tracks. The arrows indicate the direction of possible movement. General Mathematics 1, Introduction to Two-year Algebra, and Algebra 1 are the common courses of upward and downward mobility across tracks.

College preparatory course paths. College preparatory programs typically included sequences such as:

Algebra 1 ⟶ Geometry
Algebra 1 ⟶ Basic geometry ⟶ Algebra 2
Algebra 1 ⟶ Two-year algebra (conclusion) ⟶ Geometry
Two-year algebra (introduction and conclusion) ⟶ Geometry

The sequence of Algebra 1 and geometry represented the shortest route to obtaining the content represented in these sequences. Students could complete a college preparatory sequence in three years

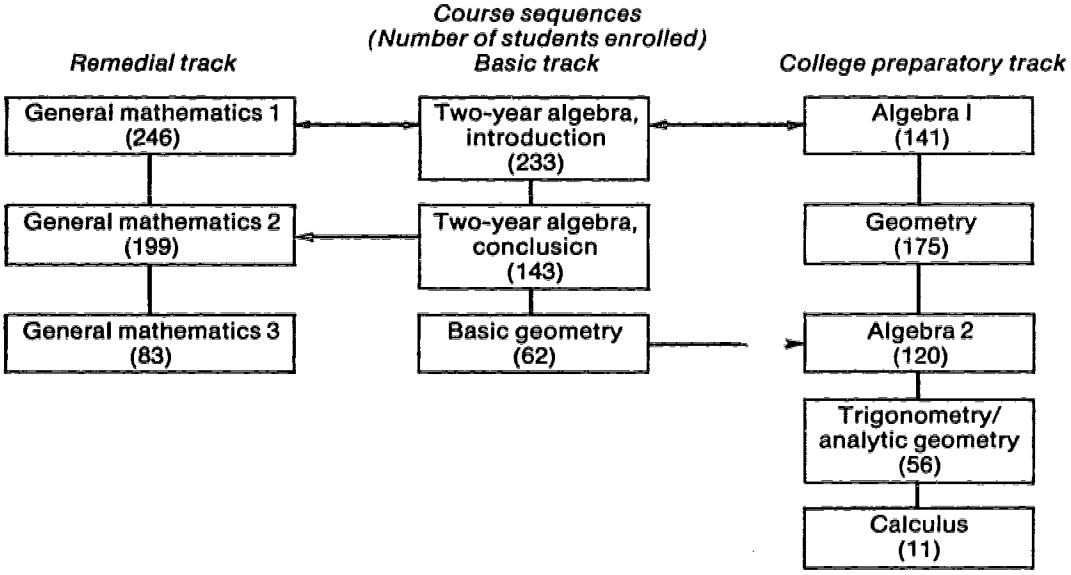


Fig. 14. Curricular map for mathematics in Paths' School 8

instead of two; however, the alternative courses might not fulfill University of California requirements. Of the 100 students completing the sequence, 70 followed the Algebra 1-geometry sequence, and 30 followed other paths. Forty-three percent of the students who completed the college preparatory sequence took at least one more mathematics course, and 27 percent took two additional years of mathematics.

Basic course paths. The basic mathematics program included the two-year algebra sequence. Students could enter the basic track from General Mathematics 1 and Algebra 1. Thus, typical general programs included courses such as:

Two-year algebra (introduction) ⟶ Two-year algebra (conclusion)
Algebra 1 ⟶ Two-year algebra (conclusion)
General Mathematics 1 ⟶ Two-year algebra (introduction and conclusion)

Of the 68 students who completed a basic sequence, ten (15 percent) began in one of the other two tracks. Ten students completed an additional year of mathematics beyond the basic sequences described above.

Remedial course paths. Although only one year of mathematics is required, students in the remedial track typically take two years of coursework. The typical sequences include programs such as:

General Mathematics 1 ⟶ General Mathematics 2
Two-year algebra (introduction) ⟶ General Mathematics 2

Most students who began in this track continued in it for two years. Of the 107 students who completed the minimum one-year program, 10 percent repeated General Mathematics 1 during the second year. Fewer than ten students moved from the general track to the remedial sequence.

Table 14 shows a distribution of students who took various mathematics sequences. Most students completed a sequence of courses that corresponded to the mathematics department's recommended sequences, and the largest portion of these students took more than the required ten units. Some students began one sequence and either failed to follow this path to completion or switched without completing any path. For example, a student could take one semester of a remedial course, switch to the basic track, then stop taking mathematics, or take only one year of the two-year sequence in the basic or college preparatory tracks. Such students fulfilled graduation requirements, but they failed to pursue a sequence to completion.

The curricula that schools plan for various cohorts of students may be seen through the curricular maps to structure programs of study over the secondary school years. Students did not take random arrays of academic courses; rather, they took sequences that were designed by the teachers in each department. Movement between sequences follows the department planning for course sequences. How students are placed and monitored in various sequences or tracks is the topic of the next chapter.

Table 14
Proportion of Graduates Taking Various Mathematics Sequences

Recommended sequence	*Track*	*Percent of students*	*Percent of students completing sequence*
Fulfill graduation requirement of ten mathematics units.	Remedial	32	100
Complete a two-year algebra sequence.	Basic	31	65
Complete at least two years, including algebra and geometry.	College preparatory	37	81

CHAPTER FOUR

Placement and Monitoring of Students

Summary

Counselors, teachers, and students play important roles in determining the courses that make up each individual student's high school program of study. Counselors provide information about courses and requirements for graduation or college admission. The counselor's primary role is that of initial sorter, placing students in tracks or sequences of courses. Teachers decide which students enter, remain in, and complete particular courses and sequences. Teachers establish the criteria for continued sorting of students into particular courses or levels of courses and set standards for completion.

The number of courses and course-level choices actually available to students depends on the tracking system at each school and on the individual student's characteristics. The students' choices of courses, particularly academic courses, are limited by the tracks they choose or the tracks to which they are assigned in each subject area. The support that students receive from counselors for decision making also depends on the track. Students in the college preparatory track and lower track receive more attention from counselors concerning the completion of college entrance or graduation requirements. Middle-track students who have no attendance or other problems and who can graduate were reported to receive less attention from counselors about their choices of courses.

Consistent and valid information about attendance, dropouts, and students' progress toward graduation was difficult to obtain in the Paths' schools. The definition of dropout varied greatly, resulting in noncomparable statistics. To follow up on students outside of school, whether they were dropouts or graduates, was reported to be expensive and difficult. Information about what students did after graduation was not considered important for curricular planning.

The monitoring of students' progress through the courses of study was a major recordkeeping problem for schools. Few schools consistently checked whether students completed the courses planned in their overall program of study, unless the students were in danger of not graduating. This type of monitoring was left to the students and their parents. Each counselor in the Paths' schools was responsible for an average of 369 students; one school had no counselors. These ratios obviously limit the time available for each student.

Placement of Students: Structures and Procedures

The great differences in curricular paths taken by cohorts of students can be understood through the two features of the tracking system that were described in Chapter Three. These features are:

- Structures (differentiation of curriculum into various courses and sequences or tracks)
- Procedures (processes by which students learn about the possible array of courses, select the courses, and continue in the sequence or track)

Chapter Four describes the procedural aspects of tracking found in the schools studied. The data about placement processes collected in the Paths' schools included accounts by school personnel and documents given to students. These accounts describe the organizational mechanism and support for the students' placement process, but they do not address the actual selection process by which individual students choose their courses.

How is it that a student ends up taking particular courses and course sequences? When asked this question, school personnel typically respond that students make these choices with the assistance of their parents and guidance counselors; however, which courses students take over four years of high school is not simply a matter of the students' choice. A number of constraints limit and predetermine what students can and do take, including the structure of the tracking system.

Curriculum differentiation has been described as the way in which high schools, departments, and teachers organize the content to be taught into appropriate units for cohorts of students. Organizing the curriculum into courses, sequences, and tracks enables schools to provide broadly defined areas of content to students with highly varied entering skills and abilities. Tracking narrows the focus of each course and the range of the students' achievement levels within a class. Tracking also limits access to students for whom the course or track is appropriate.

The procedural processes of placement and monitoring are managerial functions. As explained in Chapter Three, permanent placement based entirely on measurement of ability is prohibited. Therefore, students must be placed in courses in other ways. The placement processes found in the Paths' schools combined the criteria used for differentiating courses (e.g., achievement scores or prerequisites) with students' choices of particular courses. The processes can be described as follows:

- The initial placement of entering students
- The ongoing course placement and selection process
- The ways schools monitor students' progress through requirements

Because guidance counselors play a key role in all three processes, the student/counselor ratios in California high schools deserve attention. Excluding the one school in the study in which there were no counselors (students were monitored by assistant principals), the ratio varied greatly across schools. In the Paths' schools each counselor served an average of 369 students.

Initial Placement

Placement of entering high school students in courses and tracks is influenced by the degree of involvement of counselors, parents, and students. Students in different high schools do not receive the same amount or type of information. The Paths' schools employed diverse counseling approaches, different amounts of encouragement for parent participation, and a range of student/parent input in arriving at a first-year schedule—the initial track placement.

Nearly all of the high schools studied distributed course catalogs. These usually described courses, course prerequisites, the district's graduation requirements, and entrance requirements for California's colleges and universities. About one-third of the Paths' schools provided students with sample four-year programs of study. A few had programs geared toward specific postgraduation educational and vocational goals. For example, in one school's catalog, students interested in agricultural technology careers were presented with one program preparing them for a California state university and another preparing them for a two-year community college.

Counselors in all schools considered the same basic criteria when directing new students toward paths of study. Students usually were placed according to their scores on standardized tests, grades, junior high school teachers' recommendations, and career plans. In several Paths' schools the first-year schedule was initiated by the counselor, but parents and students could change it. In a few cases the counselor's suggestions seemed to carry more weight, and in one school the counselor actually assigned students to a first-year schedule.

Parents of entering students had varying amounts of contact with the school staff. Many counseling staffs invited parents to meetings to receive information similar to that given to the students. Some counselors informed parents about school requirements and possible programs of study. Counselors in a few schools asked parents to attend the initial student/

counselor conference to discuss the students' plans beyond high school and possible four-year study programs. Paths' schools that encouraged parents to attend the initial conference reported that their attendance rate was high.

Some of the enrollment procedures provided that the parents and students would plan the first-year schedule. The schedules usually were accepted by the school unless the counselor felt strongly that the student was not prepared for a particular course or that the student would not complete the graduation requirements.

Ongoing Course Placement

Students continue in particular courses and tracks by registering for courses either once or twice during an academic year. In some Paths' schools students' schedules were determined in the fall for the entire year. Most schools, however, had some type of registration process each semester, usually for the purpose of changing courses or selecting electives. Because many courses were a year in length, second semester registrations were automatic unless students needed to register for half-year classes.

Many schools used sign-up systems referred to as "arena," "scramble," or "milling." For example, in some schools "arena" scheduling was used for the purpose of having students sign class lists for elective courses. In other schools students received a list of courses they should take based on preregistration preferences or counselors' suggestions. Students were then allowed to choose the teachers from whom they would like to take the preassigned courses. This allowed a final opportunity to change the schedule just before or even after courses began. A number of counselors reported that students' schedules changed or were not finalized until well into the first weeks of the terms, causing class interruption and loss of instructional time.

Counselors' roles in ongoing placement. Counselors at most of the schools relied on course descriptions prepared by teachers or department heads for their information about specific courses. A few schools assigned individual counselors to particular departments to gain a more detailed understanding of the department's offerings so that this information could be shared with the rest of the counseling staff. In addition, counselors frequently learned about specific courses through contacts with teachers. Thus, the amount and type of information that counselors could provide students depended on what the counselors knew about the content of the available courses and how they obtained this information.

Most schools arranged for routine individual conferences between students and counselors. Some schools attempted to include parents in these meetings, but most schools did not. The conferences typically focused on graduation requirements yet to be completed, the status of proficiency testing, and postgraduation plans. The formal student/counselor meetings usually were an annual event, but a few schools reported that routine conferences took place prior to each semester. A few schools scheduled only one conference during a student's high school career. In these schools each student met with a counselor at the end of the sophomore year or the beginning of the junior year.

Teachers' roles in ongoing placement. Teachers play a significant role in determining which courses and course sequences students eventually take. They assume the role of gatekeeper and determine which students should be allowed to enter specific courses, especially college preparatory courses. In most Paths' schools counselors depended on the teachers' recommendations to guide students toward courses and tracks. Teachers assessed students' abilities during the first weeks of a term, in some cases by administering formal tests. To remain in a class, students had to meet the course standards, pace, expectations, and work load. Final enrollment in courses was frequently determined after several weeks of coursework, and students for whom a particular class was either too difficult or too easy were moved. Teachers also directly influenced students' choices by suggesting course sequences to them. Access to advanced courses was frequently obtained by means of prerequisites established by teachers.

Students' roles in ongoing placement. The importance of giving the students a choice in the ongoing selection of courses differed within the schools by track. Students who failed to pass the proficiency examinations were encouraged to attend or were automatically placed in remedial courses, depending on the policy of the local school or district. Courses for students in the upper tracks were largely determined by college entrance requirements. The highest achieving students had the fewest choices, because academic sequences planned for them took up almost all of the available time.

Students in the general education track who had relatively few difficulties in meeting graduation and proficiency requirements and did not plan to attend a four-year college tended to have the most choices to make concerning their programs. These students were not enrolled in assigned remedial courses and had fewer reasons for being steered toward academic electives. The nature of their study programs was largely a function of personal choice within the offerings available in their tracks.

Monitoring the Progress of Students

Four kinds of monitoring processes were conducted by the schools. These processes included monitoring the (1) daily presence of students (e.g., attendance and dropouts); (2) course of study, proficiency, and college entrance requirements; (3) courses taken to complete each student's overall plan or blueprint; and (4) students' postgraduation destinations. Few schools formally pursued all four kinds of monitoring; however, many schools relied on informal sources of information. In nearly all Paths' schools, guidance counselors had the primary responsibility for the monitoring. Descriptions of these monitoring procedures follow:

1. *Attendance and dropouts.* Students needed to be present in classes to learn the curriculum planned for them. Schools and districts varied widely in their ability to keep track of students. Some checked attendance each period; some, each day; and some, far less frequently. Estimates of daily attendance ranged from 72 to 100 percent (excluding excused absences). Estimates of students in attendance but cutting classes ranged from 0 to 10 percent.

   All schools reported difficulty in knowing exactly which and how many students were enrolled. Transiency rates limited the ability of the schools to forecast which students would be in particular classes over the school year, even though total enrollment figures were relatively stable. One of the Paths' schools reported more than a 70-percent turnover of students each year. Teacher planning for curriculum was significantly affected by the continual changes of students in each class. In addition, scheduling courses and course sections depended on the number of students projected to enroll in each course.

   The difficulty of counting and keeping track of students was most apparent in attempts to determine dropout rates. Establishing who was a dropout and when a student had dropped out required the school to determine where students went after they stopped attending the school. This frequently required the counselor to contact the student or family. Usually, schools requested records for a new student, and this signaled the previous school that the student had moved and reentered school rather than dropped out. The counselor had to add this information to the student's records and decide how to compile it when an aggregated estimate was desired. The dropout rate for Paths' schools was reported to be an average of 8.1 percent, with a range of 1 to 35 percent. In one large school the aggregated dropout figure was computed by subtracting the number of graduates in 1981 from the number enrolled as ninth graders in 1977; this calculation indicated a 35-percent decline.

   As in the above example, dropouts often are confused with those students who transfer. Some schools experience ten to 15 students entering or leaving school each day, an average turnover of 1,000 students per semester. Tracking each of these students requires a trail of paperwork and hours of counseling time. Some of these students enter another school right away and request that their transcripts be sent, while others may not reenter school for some time. Schools with large migrant worker populations lose students for several months.

2. *Completion of requirements.* Monitoring each student's completion of requirements was a highly routinized but time-consuming process. Counselors maintained students' files by collecting and entering the data for each of the numerous students assigned to them. In a few cases the clerical task of monitoring proficiency test results fell to the school registrar or an assistant principal. In other schools student aides or secretaries alleviated some of the clerical responsibilities of counselors, thereby freeing the counselors to spend more time with the students. Streamlining cumbersome tasks associated with counseling depended on the creativity of each school's administrative and guidance staff. Many schools employed computers to keep track of students' progress.

3. *Match between courses and plans.* Only a few schools formally monitored the match between the actual courses students were taking and their initial program plans. This task was often squeezed in with the monitoring of requirements, especially for the students who were planning to attend college and had to meet entrance standards. Generally, this kind of monitoring was relegated to the students and their parents.

   Counselors reported that they spent more time with students in the remedial tracks and college preparatory tracks, while students in the general education tracks received less guidance. Counselors were responsible for arranging special programs and tutoring for students who failed proficiency tests or had problems meeting the graduation requirements. At the other extreme were the students who expected to attend four-year colleges. For these students counselors spent more time evaluating courses, offering sug-

gestions about colleges, and providing information about scholarships. Students in the general education tracks required less of the counselors' attention because their postgraduation plans were less clear.

4. *Postsecondary destination.* Few schools (only five of the 16 Paths' schools) formally collected information about the progress of their students after graduation. When information was collected, it was in the form of surveys sent to the students' homes, and the response rate was low. In one school a phone survey was conducted; however, the written or phone surveys were not regular or ongoing. All high schools received information from the University of California and California State University systems describing the academic progress of their students in those systems in comparison to other students. However, this information was not reported to be used in any thorough or systematic way.

In spite of the importance that counselors placed on students' career plans in selecting courses, the lack of postgraduate information was not commonly perceived as a problem. This information was considered important for counseling and curriculum planning in only three of the schools that collected it. Even when the information was available, it rarely was used. Information about what students actually do after graduation could be used by counselors to assess the success of their programs of study and counseling practices supporting students' choices.

CHAPTER FIVE

Comparing Curricular Structures

Summary

Curricular structures (described in Chapter Three) and placement processes (described in Chapter Four) tended to interact with particular consequences for different cohorts of students. Although these two components of tracking systems were found to differ across the schools studied, the even more striking pattern emerging from the case studies was the consistent curricular effects of the tracking system on students within the same school.

Using three criteria to describe and compare tracks and schools, students in the upper tracks of all schools were found to have available significantly more sequentially planned academic courses. By contrast, courses planned for students in the lower tracks were shorter sequences with lower expectations. Progress to higher-order skills and access to courses in other tracks was limited in the lower tracks of most schools.

Such differences in academic course structures had a significant effect when compared in terms of available instructional time. Students in the upper tracks, simply because more sequential, academic courses were planned for them, were able to accrue as much as two more semesters of coursework in some academic areas than did students in the lower tracks. Therefore, students who entered high school already well prepared (e.g., those in the upper tracks) had more opportunity to increase their academic preparation than did students who entered high school less well-prepared (e.g., those in the lower tracks).

Criteria for Comparison of Curricular Structure

The following comparisons of curricular structure in the Paths' schools are limited to the data gathered from interviews about courses, course sequences, and related policies and practices. These comparisons do not include the way in which the curriculum is actually taught by teachers in classrooms across the state. The level of inquiry or unit of analysis used here is the semester or year-long course.

The three criteria used to assess and compare curricular structures across tracks and schools were:

- *Amount.* The amount of coursework within each track or sequence (e.g., number of courses or length of sequence) and the expectations of work covered in each
- *Level.* The progressive nature of sequences, leading to higher order skills and content (articulation among courses in a sequence with increasing difficulty levels)
- *Access.* Coordination of courses across tracks and areas to be available to students (articulation of content and prerequisites of all courses)

Two important caveats should be kept in mind. First, this analysis was limited to three academic departments and the major course sequences within these areas. The analysis excluded other important subject areas and so-called elective courses. In this use *elective* refers to courses that were not part of sequences or that were not taken by most students in a cohort. Thus, electives may have included highly advanced, rigorous courses, such as Shakespeare, and may have been taken in lieu of or in addition to courses planned as a sequence.

Second, this analysis assumed that there was really something sequential about the course sequences as described by school personnel. From curriculum maps, other documents, and the reports of department chairpersons, there were indications that English 2 was more advanced than English 1; however, the coordination and planning of such courses varied. To some degree, sequences were assumed to represent meaningful relationships among courses at the daily level of content that had not been studied directly.

For example, when a course entitled English 2 followed English 1, the skills and knowledge learned in English 2 presumably required those learned in English 1. In addition, the two courses together should have presented to students some essential substance in the area of knowledge called English. If chemistry is a prerequisite for biology, the work entailed in biology should build on the knowledge and skills acquired in chemistry, creating a sequence that teaches students important components of science. A sequence entitled Remedial Reading I and II suggested that the two courses constituted a progressive accumulation of reading skills. This may, in fact, not have been the case.

Comparing Curricular Planning Across Tracks Within a School

In the following comparison of curricular planning across tracks, School 21 was used as an example. It had grades nine through twelve with an enrollment of over 2,000 students: 20 percent black, 20 percent Hispanic, 10 percent Asian, and 50 percent Caucasian. There were 96 teachers in 15 departments in the school, five administrators, and five counselors. The school graduated 90 percent of its seniors in 1981 (3 percent failed course requirements, 1 percent failed proficiency requirements, and 6 percent failed both). Enrollment had dropped from nearly 5,000 students ten years ago, cutting the teaching staff dramatically. The school ranked in the twentieth percentile in the state on CAP reading scores, with about equal proportions of students in each achievement quartile (except 30 percent in the bottom quartile).

The interviewers described their site visit as follows:

> Most of the information requested had been prepared by the time we arrived at School 21. At that time we met with the pinrcipal, vice-principal for instruction, and head counselor. All of those we talked to seemed knowledgeable and conversant with the information we sought. Most had been at the school for up to ten years. The most difficult question was that concerning the dropout rate. Everyone we talked to felt that this number was almost impossible to estimate, and very little information about it was available. Other information was easily available, and most of it was collected and tallied as a matter of course. These people were very concerned about their curriculum and, because of their preoccupation with budget cuts and staff and course manipulation, kept close tabs on attendance, teacher/pupil ratios, changes in student body and school characteristics, and so forth.

Cohorts of Students

All respondents at the school agreed that there were four tracks: lower, middle, college preparatory, and GATE (gifted and talented education), except in science. The researchers who conducted the case study reported the following:

> The school offers four tracks: remedial, general, college preparatory, and gifted, with considerable differences among the courses offered at each level. The lowest levels concentrate on the most elementary skills with materials using the simplest language and ideas. There is some crossover of students in classes at the general and college-preparatory level courses, particularly English courses. And, to some extent, these courses cover much of the same material. Only the courses at the college preparatory and gifted levels, however, are acceptable for admission to the University of California. In other fields the courses are vastly different. College preparatory and gifted students enroll in the science (biology, chemistry, physics) and mathematics (Algebra 1 and 2, geometry, trigonometry/algebra) sequences acceptable to the University of California, while lower-track students study general mathematics and a survey "World Science" course, which is divided into a semester of physical science and semester of biological science. These courses are taught at a much more elementary level than at the higher track. The history courses are also different, where the lower-track history course is composed of newspaper and magazine material about current events. There is comparatively little crossover of general or remedial students into college preparatory courses in science or mathematics.

The course sequences for each track in School 21 are shown in Table 15. The GATE and college preparatory tracks were combined for simplicity, because many courses had the same titles but access to them was restricted. The college preparatory and GATE courses in English, mathematics, and science were designed to extend for four years. Most courses in this

track had specific prerequisites in terms of previous courses to be taken and a minimum grade of C to continue in the sequence.

By contrast, the middle-track sequence extended for three years in English and mathematics and one year in science (taken in grade ten or eleven). Most of these courses also required a minimum grade of C to continue in the sequence. In the lower track, English and mathematics courses were planned for two years, and science was planned for one year. Only two tracks were available in science: college preparatory and middle/lower track. Courses in the lower track had no requirements beyond initial placement criteria.

Amount of Coursework

The length of sequences in each track clearly differed. The differences were greatest across tracks in science and mathematics. College-preparatory students, if they actually enrolled in the sequences offered, could take four-year sequences in each subject. Middle-track students had a possible four-year English sequence, three years of mathematics, and one year of science. Lower-track students had a possible four-year English sequence, three years of mathematics, and one year of science. However, the number of courses in each sequence could be seen in the number of sections indicated at each level. The college mathematics sequence began with ten class sections, but only two sections of students enrolled in trigonometry/advanced algebra. Similarly, six sections of biology were taught, but only one section of physics.

Expectations of the students varied significantly across tracks. The interviewers' statement follows:

> Sections of the same course receive the same materials for the first nine weeks. Other than this, there is no

Table 15

Curricular Structure in Paths' School 21

Track	*Subject*	*Year 1*	*Year 2*	*Year 3*	*Year 4*
College Preparatory	Mathematics	Algebra (10)†	Geometry (7)	Algebra II (2)	Trigonometry Advanced Algebra (2)
	Science	Physical science†	Biology (6)	Chemistry (2)	Physics (1)
	English	English IA (5)†	English IIA (4)	English IIIA	English IVA (3)
Middle	Mathematics	General mathematics IA† or Preparatory algebra (3)‡	Mathematics IIA (5)** or Career mathematics (2)**	Consumer mathematics (2)	
	Science		World science (15)		
	English	English IB (8)†	English IIB (8)	English IIIB (5)	English IVB (3)
Lower	Mathematics	Mathematics fundamentals IB (5) or Basic mathematics (3)†			
	Science		World science (15)		
	English	English fundamentals (5)*	Language experience (3) or English fundamentals (4)		

KEY: † = Initial placement and test score.
‡ = Access course to next track.
* = Failed proficiency test.
** = Prerequisite course or grade in a course.
( ) = Number of sections offered.

school policy governing homework. There is, however, a school condition, the lack of enough books and supplies, which has a very profound effect on homework.

According to all school personnel interviewed, students in lower tracks do not return their books at the end of the semester or even bring them to school during the semester. As a result, lower-track students may no longer take their books home, and therefore, in effect, these students have no homework. Instead, reading and assignments are done in class, seriously cutting into instructional time and reducing the amount of material covered during the semester. The chairperson also complained that these students would not do homework anyway.

Level of Coursework

From the combination of prerequisites and course titles, the college preparatory track appeared to offer progression to higher-order skills and content in all three areas. The general track seemed to have progression in English and in mathematics. But, since the science track was truncated, clearly no progression was possible in the general track. The lower track did indicate progression at the very basic skill level but not into higher-order skills or content.

The interviewers described articulation of courses in School 21 as follows:

Question: Do sequences within departments fit together in coherent paths so that, particularly from the student's point of view, there would be a sense of purpose in the combination of courses, content, and skills being developed?

Response: Coherent paths occur only at the college preparatory and gifted levels and then only in English and mathematics. Physics is scheduled as the senior course apparently because students need two years of mathematics prerequisites, but there is no science prerequisite for any science course. This seems appropriate to the nature of the disciplines, although one might expect that physics would have a chemistry prerequisite.

Question: Are courses sequential, i.e., do they have prerequisite skills and knowledge, and are they in some sense cumulative, leading to advanced levels of skill and content? In all areas (in general education as well as in college preparatory programs)?

Response: College preparatory English and mathematics courses are sequential, with previous courses required for enrollment in advanced courses (trigonometry/algebra requires geometry, English 12 requires English 11, and so forth). In science, college preparatory chemistry and physics courses, by their nature, have only mathematics prerequisites. (Chemistry requires algebra with a score of B or better. Physics requires algebra and geometry.) Advanced English courses concentrate on college preparatory materials and a review of English literature.

General science courses are neither sequential nor cumulative and seem to be in a constant state of change. The chairperson claims that "no one knows how to teach science to lower-track students." Courses in general mathematics concentrate on arithmetic and applied "consumer mathematics." There are only three years of general mathematics courses, each leading to the next. Lower-track English courses concentrate on fundamentals and have no prerequisites. There are no lower-track English courses in grade twelve.

Access to Courses Across Tracks

Initial track placement had a significant effect on access to other courses, but there could be several routes to higher-level or more advanced courses. In mathematics, for example, students could begin in lower-track Mathematics Fundamentals IB. They could progress to General Mathematics IA or preparatory algebra and then possibly to advanced courses in the middle sequence. Similarly, middle-track students could move from preparatory algebra to algebra in the college preparatory track. The interviewers stated that the mathematics department had designed an algebra course that covered the usual one-year algebra in three semesters to encourage middle-track students to take algebra.

Initial track placement in all departments was made by counselors on the basis of previous grades, test scores, teachers' recommendations, and students' or parents' preferences. Ninth-grade students were placed in mathematics courses and given the same work for two weeks in all classes; then adjustments in tracks were made. Students were given the same work in English courses for nine weeks, after which track adjustments were allowed.

Science students rarely moved after initial placement (i.e., few students moved from world science to biology or chemistry). The primary barriers were initial placement and the mathematics prerequisites for the college preparatory science courses. Thus, few students, except those initially placed in college preparatory mathematics and science, had access to advanced science courses.

Factors cited as affecting length of sequences, progression of sequences, and access to courses were:

- Low-level skills of entering students (some reading at levels below fifth grade)
- Teachers working outside their specialization because of enrollment decline and teacher layoffs
- Lack of pressure or incentives for students to take advanced courses, particularly in lower tracks

Comparing Curricular Structures

In the following comparison, Paths' schools 2 and 21 are used to illustrate the differences that curricular planning may make for students across tracks. The curricular structure of sequences in English, mathematics, and science for School 2 is shown in Table 16. (The curricular structure in Paths' School 21 was shown in Table 15.) Common to both schools is the fact that the longest sequences and highest level courses were available to the highest achieving students. Concomitantly, the expectations were greater for the higher tracks.

A significant difference in the curricular planning between schools 2 and 21 was that the students in School 2 had available a full four-year sequence of courses in each track. There were no internal barriers to completing four years of sequential courses as there were in School 21. Important demographic differences existed between schools 2 and 21.

As shown in Table 16, the remedial track in Paths' School 2 appeared to be short (two years) in English and mathematics, but each course was intended to prepare students to move into the general track sequence. A student beginning in the remedial track could not complete the highest level (e.g., senior level) courses in any other track because of time limitations, but progression to courses offering higher-order skills and content was possible in each subject. Students were able to choose electives during the last two years of English, but these were clearly designated as more advanced or more general. The mathematics department followed the traditional sequence and reported little movement between the general and college tracks, with each functioning as a complete and fairly separate sequence.

The most significant difference between the two schools was the access to a complete science sequence. School 2 offered access to advanced science courses for students in the lower two tracks. There were several routes to the different chemistry courses, requiring combinations of biology and/or mathematics courses as prerequisites. These prerequisites were available to lower-track students. Many students completed the entire sequence, as indicated by the 11 sections of physics that were provided.

Table 16

Curricular Structure in Paths' School 2

Track	*Subject*	*Year 1*	*Year 2*	*Year 3*	*Year 4*
College Preparatory (50 percent of students)	Mathematics	Mathematics 1A (8)†	Mathematics 2A (7)**	Mathematics 3A (5)**	College calculus (2)** or computer mathematics (2)**
	Science	Physical science(14)	Biology (1)	Chemistry (1)	Physics (11)
	English	English 1A (6)	English 2A (6)**	Humanities (2)** American classics (3)	College English (2),** world classics (2), or electives
General (40 percent of students)	Mathematics	Mathematics 1B (8)†	Mathematics 2B (8)**	Mathematics 3B (2)**	Mathematics 4 (5)**
	Science	Physical science(3)	Biology or chemistry (1)	Chemistry or biology (1)	Physics(11)
	English	English 1B (9)†	English 2B (9)**	American Literature (7)**	
Remedial (10 percent of students)	Mathematics	General mathematics (3)†	Pre-algebra (3) or mathematics 1B(2)		
	Science	(Same as general track)			
	English	Skills 1 (1)† or reading lab (2)*	Skills 2 (1)‡	Skills 3 (1)*	

KEY: † = Initial placement and test score.
‡ = Access course to next track.
* = Failed proficiency test.
** = Prerequisite course or grade in a course.
( ) = Number of sections offered.

Some of the differences in the schools' curricula could be explained by the differences in the student populations. School 2 had a high-achieving student population in a fairly stable, wealthy community. Most students planned to enter college, and thus the general track was actually a lower-level college preparatory track. This significantly reduced the spread of the students' achievement to be accommodated in the curriculum and the burden on teachers to tailor content (e.g., science) to students with low skills.

Keeping in mind the differences in student populations served, the curricular planning in School 2 demonstrated awareness about higher-level academic achievement and access to mathematics and science courses. Although there appeared to be no consensus in the district or school about how the science curriculum should be organized, there was clear planning for length, progression, and access. Similarly, the English curriculum had fluidity in terms of electives in grades eleven and twelve, and progression and articulation were indicated in the planning. The mathematics tracks were the most discrete because, although they followed the traditional sequences, they also indicated concern for maximizing the amount of coursework, the level of study, and the access for all students.

The combined effects on students of length of class period and of structural differences can be seen in the comparisons of academic instructional time across tracks and schools shown in Table 17. Class periods in the study vary from 45 minutes to 55 minutes, with a mean of 51 minutes. The total cumulative instructional time was converted to hours.

By comparing the academic areas across tracks, one can see the differences within schools. In each case the college preparatory track had an advantage of nearly one hour per day of academic instruction time—if students actually took the courses planned for them. The data indicate that many students did not complete the longest sequences. The college preparatory tracks in schools 12 and 19 differed by 655 hours over four years, or about one quarter hour per day.

The enrollment decreased at each grade level in these sequences, indicating that not all students completed the full sequences of courses. The findings in Chapter Four indicated that students in the general track received less attention from counselors regarding course planning than did students in other tracks. Incentives for students in the lower tracks to take advanced level academic courses were minimal. Even students in the higher tracks had little incentive to take courses beyond those required for admission to the University of California or other institutions of higher learning.

Table 17

Hours of Instructional Time Over Four Years in Different Tracks at Three Paths' Schools

School	Track	Instructional time in hours				
		English	Mathematics	Science	Total	Average per day*
School 12 (55-minute period)	College preparatory	660	660	495	1,815	2.52
	General	495	330	330	1,155	1.60
	Lower	495	330	330	1,155	1.60
School 19 (45-minute period)	College preparatory	540	540	540	1,620	2.25
	General	540	270	270	1,080	1.50
	Lower	540	135	135	810	1.13
School 21 (50-minute period)	College preparatory	600	600	600	1,800	2.50
	General	600	450	150	1,200	1.67
	Lower	600	450	150	1,200	1.67

*Based on 720 school days over four years.

Instructional time (or "time on task") research indicates the importance of time students spend actively engaged in learning tasks. Class length represents the time available to engage students in learning activities. The findings here concern the actual use teachers make of class time.

The results of the Paths' school study indicate the advantage of academic instructional time that can accrue to students who take the available course sequences in the upper tracks. The effect of differences in length of class period is also significant. There is a greater emphasis on academic sequences for the highest achieving students. Their curriculum expectations are set outside of the school system, by colleges, and are stated in the University of California a-f course requirements. No such expectations are communicated to students at lower achievement levels.

Tracking systems are organizational responses to the diversity of students. Some students enter high school at low achievement levels, and high schools must plan courses for them. If the planning for each track created sequences of courses that were of comparable length and progressively advanced content, the tracks could be seen as providing different but equally good secondary education. However, this was not found to be the case.

Several reasons can be proposed to explain the differences in the track contents. College entrance requirements impose structure on the college preparatory track, but no such structure exists for the other tracks. Secondary teachers in academic departments are trained in academic subject matter fields that form the core of the college preparatory curriculum. In the Paths' schools teachers reported that they preferred to teach higher achieving students. They frequently reported not knowing how to teach or plan courses for general and lower-track students, particularly in mathematics and science. Textbooks and materials for students who read below grade level are less available than those for students reading at grade level. Transiency and absenteeism are greater in general and lower tracks, limiting the progressive sequencing possible in curricular planning and instruction.

In a few of the Paths' schools, the general and lower tracks were planned with long sequences of academic courses, usually in conjunction with business or agriculture courses. The tracks and courses in these schools clearly reflected local community characteristics and needs. For example, one school had an extensive program of business and work experience courses tied to English and mathematics (but not science) sequences in the general track. This type of planning results in tracks that are responsive to student differences and that provide increasingly difficult levels of coursework that are comparable to those in the college preparatory track.

If public comprehensive high schools are to maximize academic achievement of all students, curricular planning should be improved at the department and school levels for the general and lower tracks.

APPENDIX A

Paths Through High School: Data Collected

Section I: Managerial Information—Descriptive Data on Schools

This section is intended to provide comparative data on the important demographic and organizational features of the schools: (1) to assist interviewers in becoming acquainted with each school; and (2) to assess the managerial access to and use of information for decision making. The following factors should be assessed:

1. Enrollment by grade level
2. Grade level structure
3. Ethnic distribution
4. English proficiency percentages
5. Special funding (special education, school improvement, Title I, and so forth)
6. Attendance—daily excused and unexcused absences, class cuts
7. Graduation rates—nongraduate breakdown by course requirements and proficiency failures
8. Proficiency testing results for classes of 1981—1985
9. Students taking the proficiency examination
10. Dropout rate
11. Number of teachers (FTE)
12. Pupil/teacher ratio
13. Class size—high, low, average
14. Minutes per class period
15. Class periods taken by students (average, minimum, maximum)
16. Number of administrators (FTE)
17. Administrator/staff ratio
18. Number of counselors
19. Student/counselor ratio
20. Departments in school
21. Enrollment trends over the past ten years
22. Characteristics of student population (mobility, aspirations, socioeconomic status, and so forth)
23. Community from which students are drawn
24. Administrative and counseling functions
25. Yearly and daily class schedules
26. School organization if not departmentalized
27. Interviewer assessment of availability, accuracy, interest in and use of information for managing school

Section II: Graduation Requirements

Graduation requirements vary across California school districts because the *California Education Code* specifically assigns the setting of these requirements to local school boards. No statewide data are available about the graduation requirements, nor are there uniform ways of enumerating or defining course credits. The task in this section is to describe in detail the requirements so that we can develop ways to compare them across schools. The following factors need to be assessed:

1. Courses required for graduation by subject area
2. Specificity of course requirements by track
3. Definition of unit used for course credit
4. Changes in requirements over 20 years in total units and specificity of courses required
5. Perceptions of causes for changes over time

Section III: Postgraduation Data

The purpose of this section is to find out if high schools know what their students do after they graduate and, if so, what use they make of this information. The following factors need to be assessed:

1. Sources and information available about students' plans or actual destinations
2. Proportions of students attending universities/colleges and entering jobs
3. Length of time students are followed
4. Changes in students' destinations over time
5. Use of information about students' destinations in curriculum planning and counseling

Section IV: Curriculum Policy and Management

This section is concerned with the school-level policies and practices regarding curriculum management. We are

most interested in those that would affect the quality and content of courses. The following factors should be evaluated:

1. Descriptions of school policies and practices for determining (including level of decision making and information used for decisions)
   a. Which courses are offered
   b. Determination of course content
   c. Teachers' assignment and qualifications for courses taught
   d. Course enrollment (grouping, laning, tracking), students' placement
   e. Course articulation (sequence of content and skills)
   f. Monitoring of students' progress in proficiencies and graduation requirements
   g. Standards, grading
   h. Assignments, students' work
2. External factors affecting curriculum, instruction, and curricular organization (e.g., declining enrollment) and specific policy changes
3. Effects of proficiency assessment
4. Policies adopted to cope with factors that affect curriculum
5. Major focus of managerial attention in school
6. Interviewer assessment of external factors that affect curriculum

Section V: Curriculum Differentiation

This section begins to address what broadly can be called the problem of the comprehensive high school. How does a school provide a socially agreed upon body of knowledge and skills to students with varied entry characteristics and goals? The usual organizational responses to student differences are curricular and instructional differentiation through grouping, use of different materials or content for different groups of students, and varying instructional styles. This section specifically addresses curricular differentiation.

Prior to 1970 students frequently were tracked using aptitude test measures in various course sequences, which usually resulted in segregation of ethnic and social class groups. Following pressure for equity and desegregation as well as concern about bias in aptitude tests, the state proscribed such rigid tracking. However, grouping for instructional purposes based on other criteria is still a feature of California schools. The task here is to describe the ways in which schools have differentiated the curriculum to deal with conflicting pressures for equity of access and uniform standards. The following factors need to be assessed:

1. Number of tracks, lanes, streams, sequences, or paths
2. For each track or path:
   a. Name or description of path or destination (e.g., college preparatory)
   b. Percent of students in each path
   c. Typical course sequences in English, mathematics, science, and others
3. Sequential characteristics of paths and courses
4. Articulation within departments of course paths
5. Remedial course outcomes (advanced level coursework)
6. Course sequencing in elective systems and coherence in untracked systems
7. Course comparability across tracks
8. Basis for grouping (or not grouping)
9. Comparison across respondents of path descriptions
10. Changes in paths over time
11. Interviewer assessment of descriptions of tracking systems obtained from various respondents compared with descriptive materials available
12. Interviewer assessment of effects of tracking system on equity, comprehensive and coherent curriculum provided, and standards attained by students

Section VI: Department Summaries

The data in this section are intended to describe the relative proportion of teachers, courses, and students in various departments across schools. The following factors should be assessed:

1. Subject areas represented
2. FTEs
3. Class size (average, large, small)
4. Number of course titles offered
5. Total course sections
6. Total students enrolled
7. Types of instructional groupings used
   a. Whole-class or large-group instruction
   b. Small groups or tutorials
   c. Labs or independent study
   d. Others described

Section VII: Detailed Descriptions of English, Mathematics, and Science Departments

This section contains detailed information about the actual operating policies and practices at the departmental level and individual class or teacher level. Many questions are repeated from the school-level policy section, and the consistency of responses will be analyzed. The three departments selected represent the major content areas of current public interest. The following factors need to be assessed:

1. Content areas covered
2. Organizational structure
   a. Number of personnel, titles, and roles
   b. Frequency and type of meetings
   c. Closeness of work relationships, communication
   d. Specific vehicles and arrangements promoting curricular coherence and quality (e.g., in-service training and interdepartmental coordination of proficiencies or basic skills instruction)
3. Proficiency assessment instruction and remediation
4. Departmental approach to providing advanced-level coursework and encouraging students to take advanced courses

5. Policies and procedures, decision processes, and information used in decisions about:
   a. Which courses are offered
   b. Course content
   c. Assignment of teachers and their qualifications for courses taught
   d. Assignment or placement of students in courses
   e. Articulation and coordination among courses
   f. Courses designated as meeting the University of California a-f requirements
   g. Textbooks and materials used
   h. Difficulty and pace of course
   i. Grading and standards
   j. Number, timing, and length of reading, writing, and homework assignments
6. Changes in courses offered over the past 20 years
7. Rigor of course content
8. Important curricular issues
9. Interviewer assessment of department
10. Courses and sequences taken by different groups of students, including prerequisites, level, number of sections, and number of students enrolled

Section VIII: Students' Access to the Curriculum

This section is intended to determine how the organizational structure of the school and the policies described earlier affect actual progress of students through the course of study. The following factors were used in analyzing students' paths through high school:

1. Process by which students are placed in courses
   a. What information is provided to students and parents
   b. When information is provided about requirements and alternative course paths
   c. How information is presented and disseminated
   d. Who presents or provides it
   e. Criteria used for counseling students into particular courses or sequences
   f. Actual procedures for enrollment
2. Counselors' knowledge about courses, requirements, and students
3. Monitoring of students' progress regarding
   a. Proficiency requirements
   b. Graduation requirements
   c. Courses appropriate to goals
4. Students' mobility within tracks or paths
   a. Access to college preparatory courses
   b. Movement out of remedial, bilingual, or ESL programs
5. Placement options (alternative programs; e.g., continuation school)
6. Interviewer's assessment of students' placement procedures and impact on students
7. Effectiveness of tracking system for accomplishing avowed purposes
8. Permeability or flexibility of tracks
9. Barriers to students' taking rigorous, coherent sequences of courses

Section IX: Future Data Collection Options

The purpose of this section is to determine which schools might be good candidates for follow-up investigations about the effects of tracking on mobility within course path. The eventual products of this extended inquiry might include students' interviews and analysis of transcripts. The following factors should be assessed:

1. Identification of students
   a. Not expected to graduate but graduating
   b. Switching into college preparatory courses
   c. Switching out of college preparatory courses
   d. Characteristics of students who switch
2. Access to students and transcripts

Section X: Interviewer Assessment of School Management and Effectiveness

The final section asks data collectors to reflect on the findings and their experience of the school in an open-ended way, using their own expertise and judgment about the issues being addressed. Specifically, they are asked to assess:

1. Managerial attention to curricular issues and policies
2. Specific policies or practices and the results
3. The appropriateness of the questions suggested and response format provided for each particular setting

APPENDIX B

Programs of Study

Student A

Courses	Units	Subject area
Grade nine (two semesters with 60 units):		
Two-year Algebra (Introduction)	10	Mathematics
English 1-2	10	English
Cultural Awareness (state requirement)	10	Social studies
Typing 1, 2	10	Business
Homemaking I	10	Home economics
Freshman Physical Education	10	Physical education
Grade ten (two semesters with 57.5 units):		
Language Skills	10	English
General Biology, Intro to Life Science	10	Science
Clothing 2	10	Home economics
Beginning Restaurant Management	20	Home economics
Sophomore Physical Education	10	Physical education
Grade eleven (two semesters with 62.5 units):		
Language Skills	10	English
Basic U.S. History	7.5	Social studies
Intro Life Sciences	2.5	Science
Advanced Foods	5	Home economics
Exploring Childhood	2.5	Home economics
Beginning Arts and Crafts	5	Art
Advanced Glee	10	Music
Cafeteria Aide	10	Work experience
Junior Physical Education	10	Physical education
Grade twelve (two semesters with 50 units):		
Basic U.S. History, California History	5	Social studies
Basic Civics	7.5	Social studies
Food for Singles	5	Home economics
Advanced Glee	7.5	Music
Beginning Piano	2.5	Music
Senior Physical Education	7.5	Physical education
Teacher's Aide	7.5	Work experience
Cafeteria Aide	7.5	Work experience

Total units completed: 230 units.

Student B

Courses	Units	Subject area
Grade nine (two semesters with 57.5 units):		
Algebra I	10	Mathematics
English 1, 2	10	English
Cultural Awareness (state requirement)	10	Social studies
Mechanical Drawing I	10	Industrial arts
Freshman Physical Education	7.5	Physical education
Natural Resources: Wildlife Management	10	Agriculture
Grade ten (two semesters with 60 units):		
Basic Geometry	10	Mathematics
Short Story, Creative Writing	10	English
Natural Resources: Forestry Management	10	Agriculture
Typing 1, 2	10	Business
Auto Mechanics I	10	Industrial arts
Sophomore Physical Education	10	Physical education
Grade eleven (two semesters with 57.5 units):		
Mathematics Today	2.5	Mathematics
American Literature, Advanced Grammar	10	English
Agricultural Business, Feeds and Feeding	10	Agriculture
U.S. History	5	Social studies
Junior Physical Education	10	Physical education
Work Experience	20	Work experience
Grade twelve (two semesters with 60 units):		
California History	5	Social studies
Civics	5	Social studies
Agricultural Welding, Farm Equipment Maintenance	15	Agriculture
Psychology	5	Social studies
Senior Physical Education, Coed Physical Education	10	Physical education
Work Experience	20	Work experience

Total units completed: 235 units.

Student C

Courses	Units	Subject area
Grade nine (two semesters with 60 units):		
Algebra I	10	Mathematics
English 1, 2	10	English
Cultural Awareness (state requirement)	10	Social studies
Spanish I	10	Foreign languages
Symphony Band, Concert Band	10	Music
Physical Education Band	5	Physical education
Freshman Physical Education	5	Physical education
Grade ten (two semesters with 60 units):		
Geometry	10	Mathematics
Children's Literature, American Literature	10	English
College Preparatory Biology	10	Science
Spanish 2	10	Foreign languages
Typing 1, 2	10	Business
Sophomore Physical Education	10	Physical education
Grade eleven (two semesters with 60 units):		
Algebra 2	10	Mathematics
English Literature, Advanced Grammar	10	English
Chemistry	10	Science
U.S. History	10	Social studies
Spanish 3	10	Foreign languages
Pep Physical Education	10	Physical education
Grade twelve (two semesters with 55 units):		
Independent Reading, College Writing	10	English
Civics, California History	10	Social studies
Shakespeare	5	English
Psychology	5	Social studies
Band	5	Music
Physical Education Band, Pep Physical Education	10	Physical education
Teacher's Aide	10	Work experience

Total units completed: 235 units.

Publications Available from the Department of Education

This publication is one of over 600 that are available from the California State Department of Education. Some of the more recent publications or those most widely used are the following:

Academic Honesty (1986)	$2.50
Administration of Maintenance and Operations in California School Districts (1986)	6.75
Bilingual-Crosscultural Teacher Aides: A Resource Guide (1984)	3.50
Boating the Right Way (1985)	4.00
California Dropouts: A Status Report (1986)	2.50
California Private School Directory	9.00
California Public School Directory	14.00
California Schools . . . Moving Up: Annual Status Report, 1985 (1986)	3.00
Computer Applications Planning (1985)	5.00
Computers in Education: Goals and Content (1985)	2.50
Educational Software Preview Guide (1986)	2.00
Elementary School Program Quality Criteria (1985)	3.25
Food Service Program Monthly Inventory Record (1985)	6.00
Guide for Vision Screening in California Public Schools (1984)	2.50
Handbook for Conducting an Elementary Program Review (1985)	4.50
Handbook for Conducting a Secondary Program Review (1985)	4.50
Handbook for Physical Education (1986)	4.50
Handbook for Planning an Effective Foreign Language Program (1985)	3.50
Handbook for Planning an Effective Literature Program (1986)	3.00
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