Characteristics and Performance of Advanced Placement Classes in California

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About This Report

This report was prepared by the California State University Institute for Education Reform, a university-based policy center focusing on elementary and secondary school issues. Located on the California State University, Sacramento campus, the Institute is supported by the California State University Chancellor's Office.

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Executive Summary

This is the second report on the Advanced Placement (AP) program in California produced by the Institute for Education Reform. The first, which was based on 1997-1998 data, addressed statewide issues of availability of AP classes, participation in the program by students from diverse backgrounds, and performance on AP exams.[1] This report updates those findings to 1999-2000, and presents the results of a survey of 360 randomly-selected AP teachers which attempted to assess the characteristics of AP classes in low- and high-SES schools and the factors associated with high and low performance on the AP exams.

Background

The Advanced Placement program was initiated by the College Entrance Examination Board in the early 1950s. The program consists of high school courses that are based on the curriculum of introductory college courses, coupled with a difficult, standardized, post-course test called the AP exam (which is optional rather than mandatory at most California schools).

AP courses cover a broad range of topics. National AP exams were administered for 32 different subjects in 2000, with seven subjects accounting for about 70 percent of all AP exams taken in California. These seven subjects are U. S.. History, English Literature & Composition, Spanish Language, Calculus AB, English Language & Composition, U. S. Government & Politics, and Biology. The four next most popular AP subjects in California are European History, Chemistry, Statistics, and Physics.

The AP program has grown dramatically in California in the last decade. In 1988, 39,040 public high school students took 56, 668 AP exams. By 1998, these numbers had grown to 87,683 students sitting for more than 145,000 exams. In May, 2000, participation leaped to 111,182 candidates taking more than 193,000 exams.

The program is designed to provide multiple benefits to individual students, teachers and the education system as a whole:

- High achieving students who might otherwise find high school offerings boring instead are challenged by advanced work and are exposed to the level of study required by colleges.
- Students enhance their prospects for admission to select colleges.
- Students have the opportunity to earn college credits in high school, shortening their time at college and lowering tuition bills.
- Teachers have the opportunity to stretch their capacity, teaching college-level materials.
- AP exam results provide external, standardized validation of the teacher's ability to help students achieve high levels of performance.
- School systems have an incentive to upgrade their pre-AP-level curriculum so that students are academically ready for the AP challenges.
- Schools can attract parents and students by offering the highly valued AP courses—families that might otherwise choose a private school, thereby depriving the public schools of heterogeneous student population.

Despite its popularity and influence, there are certain key concerns that have been raised about the AP program. Critics worry that the courses place too much emphasis on facts and memorization that can bolster scores on the AP exam, rather than on encouraging the growth of critical thinking skills that are

[1] Institute for Education Reform, The Advanced Placement Program, The California 1997-98 Experience, California State University Sacramento, August, 1999 (www.csus.edu/ier/materials.html).

so valuable in high-quality college courses and later in life. Others are concerned that the AP program is elitist in nature, favoring students who have access to the best academic preparation—essentially providing only one favored subset of students with important tools for career success.

Another issues is whether AP courses are available to qualified students throughout the State—or whether there is systematic bias against students because of location (rural and low-income areas in particular), gender, or ethnicity. In addition, access may be limited because students happen to be attending a school where the faculty opposes college-level work for high school students or believes that all students should be offered essentially the same education program.

Finally, there are questions about the variation in the quality of courses and instruction from one school to the next. And there is concern about the failure of many students to engage in the complete AP program by taking the post-course exam.

With the AP program playing such a vital role in the gateway to post-secondary education and with the multiple benefits and concerns, it is important to study the program in California.

The 1997-98 Findings Updated to 2000

In May, 2000, Educational Testing Service surpassed the one million mark for the first time in the number of Advanced Placement examinations administered to public school candidates across the nation. California's public high school students contributed mightily to this total, taking 193,034 exams, nearly 19% of the total, thereby substantially exceeding its proportion of the nation's high-school population.

Growth Continues in California. AP exam-taking in California continued to grow rapidly in 2000, rising by 12.7% over the 1999 total. Since 1997, the number of exams taken by public school students in California has increased by 48.3%, far outstripping high school enrollment growth of 13.5% during this period.

Availability of AP Courses. As measured by the number of different subjects in which students from a school took an AP exam, the availability of AP instruction continues to vary greatly among schools across California. The number of subjects in which schools recorded one or more AP exam results in May, 2000, ranged from one to 26. Students in 30 schools took an AP exam in only one subject. Students in 3 schools took AP exams in 26 subjects. In the middle, students in 118 schools took exams in 10 or 11 AP subjects.

Ethnic Groups Differ Greatly in Participation in the AP Program. Ethnic participation in the Advanced Placement program has changed little from that observed in previous years. Based on rates of taking AP exams, African-Americans, Native Americans, and Hispanics participate at much lower rates than Asians and Whites. Asian participation is more than two and a half times what it would be if their participation were proportional to their enrollment. African-Americans, Native Americans, and Hispanics participate at rates from 30% to 61% of proportionality. White participation is almost exactly proportional to their enrollment in high schools across the State.

AP Subjects Taken. Growth since 1997 in total AP exams taken has not been limited to a few subjects—every subject has grown except "Latin: Literature." The most spectacular increases have been in Statistics (+313%), Environmental Science (+268%), and Computer Science A (+ 134%). Among the subjects with the largest numbers of participants, English Language & Composition (+95%), U. S. Government & Politics (+51%), Spanish Language (+41%), and European History (+69%) have grown most rapidly. The stalwarts of the AP Program (U. S. History, English Literature & Composition, and Calculus

AB) have grown substantially in absolute numbers, but the percentage increases have been less than average because of the already high level of participation in 1997.

Exam Results. Along with dramatic growth has come a slight erosion in test scores—overall, the average score is down 2.4% (from 3.04 to 2.97) since 1996-97.[2] Among the subjects with more than 1,000 exams statewide, the greatest test score declines in May, 2000, were experienced in Art Studio General (-9.0%), French Language (-7.9%), U.S. Government & Politics (-6.4%), European History (-5.7%), and Macroeconomics (-4.3%). The greatest gains were in Computer Science A (+8.6%), Physics C Mechanics (+3.7%), and Calculus AB (+2.4%).

As was found in 1998, schools varied greatly in 2000 in their ability to achieve "passing scores" of 3 or higher. Nearly half (396) of the 817 schools had between 40% and 70% of their scores at the passing level or higher, while 158 schools had fewer than 40% passing and 183 schools achieved a 70% or higher passing rate.

Female Participation Continues to Exceed Male Participation. Statewide, female students in the AP program outnumbered males in 2000 by 57% to 43% in terms of the number who took one or more AP exams. These findings are consistent with the data in the 1997-1998 study which found that the median percentage of female enrollment in all AP classes in California was 56.6%.

In sum, increasing competition to gain admission to the low-priced University of California colleges, law suits over the equity of access to AP courses, and general concern about educational quality have fostered a great increase in interest in the Advanced Placement program in recent years, evidenced most clearly by the spectacular rise since 1997 in the number of AP exams taken. However, the growth of AP has not ameliorated the longstanding problems in the program in California including uneven availability of AP courses in schools across the state, disproportionate under-participation of ethnic minorities and males, and greatly varying exam performance among schools that is closely linked to the socio-economic level of the school. In addition, growth has been accompanied by a decline in exam scores, suggesting that the pressure to expand AP courses has weakened the overall quality of the instructional programs or that less well-prepared students are taking the classes, or both.

Program and Performance Variation

As indicated above, the study of the AP program in 1997-98 in California revealed that AP exam performance was closely tied to the socio-economic characteristics of the school—generally, the higher the economic level of the student body, the better the performance. But this general trend masks important variation among similar schools. There were schools with relatively high economic status that performed poorly on the exams, and there were schools with large populations of low-income students that performed relatively well. The record data used in the first study provided few clues as to why these anomalies exist.

It is often suggested that it is particularly difficult for small (frequently rural) schools to offer AP courses because there are not enough qualified students to financially support AP classes. Generally, it is argued that the larger the school, the greater its ability to provide options and enlist specialized resources (such as a Chemistry teacher with a masters degree in the subject) to provide advanced coursework. The 1997-98 research found that, indeed, many small schools have minimal or no AP programs, but it was also observed that there are small schools with robust AP programs, offering as many seven different AP subjects. In addition, it was found that there is little or no relation-

[2] AP exams are scored from 1 to 5, with 5 being the highest score. A score of 3 is known as a "passing" score and may earn a student course credit and/or advanced placement in college.

ship between school size and performance on the AP exam. There were some small schools that scored well and some that scored poorly, while there were also large schools that scored high and low. It is not clear what enables some small schools to offer large, high-quality AP programs (while others with the same socio-economic characteristics do not), and what causes some large schools to have programs of low quality (at least as measured by exam results) and minimal scope, while other large schools (similar in SES characteristics) have large, successful programs.

Scope and Methodology of the Phase II Study

To acquire a better understanding of the overarching trends and underlying anomalies, the Institute decided to conduct a detailed investigation in a carefully selected sample of schools and AP classes.

The primary research objectives were (1) to describe the characteristics of AP classes in a variety of socio-economic and school-size settings and (2) to see if certain characteristics (or sets of characteristics) are associated with high and low performance (while controlling for socio-economic factors).

A sample consisting of 360 classes in five AP subjects was selected. The subjects and number of schools that offered an AP class in the subject in 1999-2000 were as shown in Table 1.

Seventy-two classes were selected within each subject as shown in Table 2.

A survey was developed, field tested, revised and then

TABLE 1

Subject	Number of Schools Offering An AP Course
English Literature & Composition	618
U. S. History	587
Spanish Language	542
Calculus	521
Chemistry	228

TABLE 2 Within Each AP Subject

AP Exam Performance in Subject — Percentiles Based on Percent Of Scores of 3 or Higher

4 SES Groups	1/8 Extremely Low	2/8 Very Low	1/8 Low	1/8 High	2/8 Very High	1/8 Extremely High
Very Low	S/M/L					
Low						
High						
Very High						

—72 schools per subject

—Within each of the 24 cells (6 x 4), one small, one medium, and one large school was selected

The response rate was as follows:

Subject	Sample Size	Questionnaires Returned: Number	Questionnaires Returned: Percentage
Calculus	72	63	87.5
U. S. History	72	60	83.3
Chemistry	72	58	80.6
English Literature	72	56	77.8
Spanish Language	72	49	68.1
Total	360	286	79.4

sent to selected schools. In addition to the objective questions, 3 open-ended questions sought to gather information about teaching methods in AP classes (relative to non-AP classes), and to learn more about AP teachers' perceptions of "front burner" issues or problems associated with AP programs in their school and/or district.

Teaching Methods In AP Classes (Relative To Non-AP Classes)

AP teachers typically reported spending more than half of class time in direct instruction (lecture, discussion) and in preparation for the AP exam. Several respondents remarked on the need to "cover the required material" to prepare students for the content the exam would test. In comparison, they report that their instruction in non-AP classes is more sensitive to the progress of the students, tends to include more group projects and authentic assessments, and less in the way of "teaching to the test." Relatively few AP teachers reported assigning outside group projects as part of the regular class curriculum.

Characteristics of AP classes—Summary of Key Findings

This study has revealed a number of interesting differences between AP classes in higher-SES schools and AP classes in lower-SES schools. The key findings are as follows:

- AP teachers in higher-SES schools tend to have more years of experience teaching the AP subject than teachers in lower-SES schools. As discussed later in this report, years of experience teaching the AP subject is strongly associated with student performance on the AP exam—the more experience, the higher the scores (all other things being equal).
- While most AP teachers have little or no contact with teachers in the feeder schools, AP teachers in very-low-SES schools tend to have even less contact with feeder school teachers. A related finding is that teachers in lower-SES schools significantly more frequently report that "much more" effort is needed in working with feeder schools than teachers in higher-SES schools.
- Only slightly more than half of all teachers had "heard of" the College Board program known as "Vertical Teaming." And of those who were familiar with the approach, 80% said it was not part of the AP program in their subject. No striking differences were found with respect to Vertical Teaming among the SES groups of schools.
- A surprisingly large percentage of AP teachers—44%—reported that their students were less than well-prepared for the AP class. And nearly 60% said there were "large gaps" or "consistent deficiencies" in student preparation. Dissatisfaction with student preparation was found to be strongly associated with the SES level of the school—teachers in lower-SES schools were much more likely than teachers in higher-SES schools to report that students were not well-prepared and there were large gaps in preparation.
- In the previous report by the Institute, participation in the AP program by ethnicity was analyzed in terms of AP exams taken, In this study, AP class data by ethnicity was obtained from responding teachers. It was found that in terms of student ethnicity, participation in AP classes is highly disproportionate:

  1. African-Americans and Hispanics are grossly under-represented in AP classes. If they were to enroll in AP classes in proportion to their enrollment in the schools, African-American and Hispanic participation would have to increase, on average, by 100%. However, African-American students in very-high-SES schools appear to have a higher rate of participation than those enrolled in lower-SES schools. On the other hand, it appears that in very-low-SES schools, African-Americans enroll in AP classes at an even lower rate than their overall very low

average. There is little or no differences across SES levels in the participation rates of Hispanic students in AP classes.

2. Asian students are greatly over-represented in AP classes. Asian participation is extremely high in the very-high-SES schools. Whereas their overall participation rate is 2.52 (the ratio of the percentage of AP class enrollment to the percentage of school enrollment), in very-high-SES schools it is 3.33.

3. White enrollment in AP classes is, on average, about proportional to their enrollment in the schools. However, White students tend to have higher participation rates in low- and very-low-SES schools than in very-high-SES schools.

- It was found that AP class size in higher-SES schools tended to be greater than class size in lower-SES schools. This suggests greater demand on the part of students in higher-SES schools for AP classes, perhaps stemming from greater awareness of the benefits of the AP program (teachers in higher-SES schools more often said that "all" parents were aware of the benefits of AP classes), and higher expectations (owing to better preparation) that the students' will be successful in the difficult AP courses.

- More than 40% of the teachers said district financial support for their AP classes was "minimal" or "none."

- A surprisingly high percentage of teachers—43%—indicated that they lacked some instructional materials necessary to adequately prepare students for the AP exam. Teachers in lower-SES schools reported more frequently than teachers in higher-SES schools that they lacked necessary materials. It was found that Calculus students in low- and very-low-SES schools were significantly less likely to have their own graphing calculator. Also, Spanish teachers in lower-SES schools more frequently reported than their counterparts in higher-SES schools that they lacked the equipment they felt was necessary to thoroughly prepare their students for the AP Spanish exam.

- Teachers in very-low-SES schools indicated that there was little pressure on them to achieve high exam scores. Teachers in higher-SES schools were more likely to report "some" or "a lot of" pressure to achieve high scores.

Characteristics Most Consistently Associated With Performance

Using a very conservative approach, and applying multiple criteria, this study has identified nine factors that appear to be strongly associated with class performance on the AP exam. It should be reiterated that the following conclusions are based on performance comparisons controlling for the SES level of the school.

Number of Times Met with Feeder School Teachers This Year. Teachers in higher-performing classes consistently indicate that they have met with teachers from their feeder schools more times during the year than teachers of lower-performing classes. This finding is observed for both higher- and lower-SES schools and is true for all subjects where statistically significant differences are found. In general, teachers in higher-performing schools are more likely to have met once with feeder school teachers while the teachers from lower-performing schools are more likely to have met zero times.

Are There Large Gaps in Student Preparation. One of the most consistent findings is that teachers in lower-performing schools are more likely than teachers in higher-performing schools to see "large gaps (in other words, consistent deficiencies)" in student preparation for the AP class. Insofar as preparation is the key to success in AP courses, the teachers are (not surprisingly) often accurate in their view of the preparation of their pupils. This finding suggests that elimination of the "consistent deficiencies" that pupils bring to the AP class would be a good first step toward raising performance on the AP exam. Chapter 4 contains a discussion of the kinds of significant gaps the teachers most frequently mentioned.

Percentage of Students Very-Well-Prepared for the AP Course. Related to the previous item, teachers in higher-performing classes reported much higher percentages of their students were "very-well-prepared" to take the AP class than teachers in lower-performing classes. This finding was consistent even for individual AP subjects within SES groups.

Unqualified Students Not Admitted to the AP Class. Also strongly associated with high performance on the exam is the practice of not admitting students to the class who are not qualified. While 80% of all teachers said they did not deny admission to any students because they were unqualified, many more teachers in the high-performing classes than teachers in lower-performing classes indicated they did deny admission to unqualified students.

Principal's Attitude Toward AP Classes. In lower-SES schools, teachers of higher-performing classes more frequently reported than teachers in lower-performing classes that the principal "strongly supports" AP classes. The association is even more pronounced in the very-low-SES schools. This is particularly interesting in light of the overall response from 83% of the teachers that the principal strongly supports AP classes. In the higher-SES schools, there is no association between the teachers' views of the attitude of the principal and student performance on the exam.

Pressure To Achieve High AP Exam Scores. Teachers of lower-performing classes report significantly more often than teachers of higher-performing classes that there is "no pressure" from school administrators to achieve high marks on the AP exam. The teachers in higher-performing classes more often report "some pressure" or "a lot of pressure."

Years Teaching the AP Subject. Higher-performing classes have teachers with more years of experience teaching the AP subject than lower-performing classes. This is generally found for all subjects and for all subjects within SES groups.

Possession of a Doctorate. All statistically significant differences are in the direction linking possession of a doctorate by the teacher with higher student performance. However, this association is limited to the higher SES schools only—there was only one teacher with a doctorate in the lower SES schools..

Graphing Calculators in Calculus Classes. A higher percentage of students in lower-performing Calculus classes than in higher-performing calculus do not have their "own" graphing calculator. In higher-SES schools, 9.5% of the students in lower-performing classes did not have a graphing calculator, while only 3.3% of the students in higher-performing classes lacked the calculator. In lower-SES schools, 48% of the students in lower-performing classes lacked the calculator, while 23% of students in higher-performing classes lacked the calculator.

AP Teacher's Perceptions of "Front Burner" Issues

Several issues dominated AP teachers perception's of "Front Burner" issues. These tended to be similar across subjects, although there were some concerns specific to individual AP subjects. Teachers mentioned "bloated" class sizes, students enrolling in multiple AP courses, student's lack of preparation and of willingness to "work." They also cited need for increasing enrollment of minority students, requiring (and funding) the AP exam for AP credit,

Problems Associated With AP Programs In School And/Or District.

The problems cited by AP teachers fell into several categories: school or institutional problems (block schedule, scheduling conflicts between AP classes, class size), problems associated with AP curriculum and the AP exam (AP exam given earlier in the west), problems with student preparation and attitude, and fiscal support for teaching AP.

Conclusions

This study has confirmed the oft made observation that student preparation is crucial for success in AP classes. Schools and classes that are doing poorly on the AP exams should look first at what is going on in the preparatory courses, rather than looking first at the AP class itself. It is most likely that inadequate grounding is making the task extremely difficult, if not impossible, for the AP teacher, given the pace and scope of the AP curriculum. The articulation and coordination of concepts, skills, and knowledge needs to extend back to the middle schools and even below. AP teachers of high-performing classes often recognize this need as evidenced by the higher level of interaction with the feeder schools they appear to have. The "large gaps" and "consistent deficiencies" that many teachers report must be identified and closed.

Regarding teacher preparation, years of experience teaching the AP subject is most important. Experience is more important than attending AP Summer Institutes or Workshops, and more important than having a Masters degree. The power of this variable is true for all SES groups and generally true for all five subjects. If, in fact, many AP teachers will soon be retiring (as is frequently mentioned at AP conferences) it would not be surprising to see exam scores decline. Since experience is so important, it might be wise to encourage young teachers to become AP teachers so that once they have acquired the experience they will not be on the brink of retirement. This may require commitment from school administrations to actively recruit and select teachers for AP courses.

AP teachers need support from their principals and districts. Support from the principal should include encouragement of (and some "pressure" on) the teacher to achieve high exam results. If it doesn't matter how the students perform, they will probably not do well and maybe not even take the exam. Too many teachers report "minimal" or "no" financial support from their district. Chemistry labs need to be fully equipped and all Calculus students need a graphing calculator. Surprisingly few teachers have discretionary budgets for supplies and materials for their AP classes. It is no wonder that so many teachers indicate they lack instructional materials that are essential to prepare students to do well on the AP exam.

Chapter 1 • Background and Overview of the Study

This is the second report on the Advanced Placement (AP) program in California produced by the Institute for Education Reform. The first, which was based on 1997-1998 data, addressed statewide issues of availability of AP classes, participation in the program by students from diverse backgrounds, and performance on AP exams.[1] This report updates those findings to 1999-2000 and presents the results of a survey of 360 randomly-selected AP teachers examining the characteristics of high- and low-performing schools

Background

Many education reform efforts—such as charter schools, vouchers and specific reading or math approaches—have high visibility, inspire impassioned debate and struggle to gain a foothold in a resistant education system. But one program that shares many of the features of today's touted reforms has, with little fanfare and even less in-depth study, grown into a major c component and integral part of high school education in California. In addition, it has become a significant factor in university admission processes.

The Advanced Placement program is well known to college-bound students, but until recently has been largely ignored by researchers and policymakers alike. It consists of college level courses for high school students, coupled with optional rigorous exams. Students who take these challenging courses gain a bonus point that increases their grade point average (GPA) and, if they choose to take the exam and do well, may earn college credit for the high school work and "advanced placement" in college courses during their freshman year.

The Advanced Placement program was initiated by the college Entrance Examination Board in the early 1950s. The program consists of high school courses that are based on the curriculum of introductory college courses, coupled with a difficult, standardized, post-course test call the AP exam (which is optional rather than mandatory at most California schools).

AP courses cover a broad range of topics. National AP exams were administered for 32 different subjects in 2000, with seven subjects accounting for about 70 percent of all AP exams taken in California. These seven subjects are U. S. History, English Literature & Composition, Spanish Language, Calculus AB, English Language & Composition, U. S. Government & Politics, and Biology. The four next most popular AP subjects in California are European History, Chemistry, Statistics, and Physics cob.

The AP program has grown dramatically in California in the last decade. In 1988, 39,040 public high school students took 56, 668 AP exams. By 1998, these numbers had grown to 87,683 students sitting for more than 145,000 exams. In May, 2000, participation leaped to 111,182 candidates taking more than 193,000 exams.

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[1] Institute for Education Reform, *The Advanced Placement Program, The California 1997-98 Experience*, California State University Sacramento, August, 1999 (www.csus.edu/ier/materials.html). The data and analyses produced by the Institute for the first report were the object of a "request for data" filed by the plaintiffs in ongoing litigation addressing the equity of the existing practice of giving students extra grade points for taking AP courses in calculating their grade point average when determining eligibility for admission to the University of California and the California State University.

- Students enhance their prospects for admission to select colleges.
- Students have the opportunity to earn college credits in high school, shortening their time at college and lowering tuition bills.
- Teachers have the opportunity to stretch their capacity, teaching college-level materials.
- AP exam results provide external, standardized validation of the teacher's ability to help students achieve high levels of performance.
- School systems have an incentive to upgrade their pre-AP-level curriculum so that students are academically ready for the AP challenges.
- Schools can attract parents and students by offering the highly valued AP courses—families that might otherwise choose a private school, thereby depriving the public schools of heterogeneous student population.

Despite its popularity and influence, there are certain key concerns that have been raised about the AP program. Critics worry that the courses place too much emphasis on facts and memorization that can bolster scores on the AP exam, rather than on encouraging the growth of critical thinking skills that are so valuable in high-quality college courses and later in life. Others are concerned that the AP program is elitist in nature, favoring students who have access to the best academic preparation—essentially providing only one favored subset of students with important tools for career success.

Another issue is whether AP courses are available to qualified students throughout the State—or whether there is systematic bias against students because of location (rural and low-income areas in particular), gender or ethnicity. In addition, access may be limited because students happen to be attending a school where the faculty opposes college-level work for high school students or believes that all students should be offered essentially the same education program.

Finally, there are questions about the variation in the quality of courses and instruction from one school to the next. And there is concern about the failure of many students to engage in the complete AP program by taking the post-course exam.

With the AP program playing such a vital role in the gateway to post-secondary education and with the multiple benefits and concerns, it is important to study the program in California. This report continues the work by the CSU Institute for Education Reform and it begins in the next section by briefly reviewing the key findings published in the first report.

Key Findings Concerning the 1997-1998 Advanced Placement Program in California

The study of the Advanced Placement program in California as it existed in 1997-98 was based on data contained in the California Basic Education Data System (CBEDS, administered by the California Department of Education) and test results provided by the Educational Testing Service, Inc., which prepares examination reports for The College Board. Key findings of that study included:

- In 1997-1998, more than 90 percent of California's high schools offered one or more Advanced Placement courses, but variation in availability was great among schools and many students across all ethnicities and socio-economic strata had relatively limited AP opportunities. Because of unequal availability of AP courses, access to extra grade points was unequal, resulting in an "unlevel playing field" in the competition among students for admission to desirable universities such as the University of California.
- In schools across California, Hispanics and African-Americans generally participated in AP classes at rates substantially below their share of total school enrollment. Even in many schools that had very large AP programs (for example, with 20

classes in 10 different subjects), Hispanic and African-American students were significantly under-represented in the program.

- School performance on AP exams was strongly linked to school socio-economic status indicators. In addition, the scores of African-Americans and Hispanics were generally lower than scores by other ethnicities. However, across the State there was wide variation in exam performance among similar schools—for instance, there were both high- and low-performing central city schools, small schools, and suburban schools.
- Overall, between a quarter and a third of all students failed to take the AP exam associated with courses they enrolled in. This tends to undermine the Advanced Placement educational model which is based on improvement through modification based on results. (The UC and the CSU do not require that a student take the exam in order to earn the extra grade point, much less that a passing score be achieved on the exam.)

Updating the Findings—The Advanced Placement Program in California in 2000

In May, 2000, Educational Testing Service surpassed the one million mark for the first time in the number of Advanced Placement examinations administered to public school candidates across the nation. California's public high school students contributed mightily to this total, taking 193,034 exams, nearly 19% of the total, thereby substantially exceeding its proportion of the nation's high-school population.

Growth Continues in California. AP exam-taking in California continued to grow rapidly in 2000, rising by 12.7% over the 1998-99 total. Since 1996-97, the number of exams taken by public school students in California has increased by 48.3%, far outstripping high school enrollment growth of 13.5% during this period. Display 1-1* graphically compares the growth rates for AP exams and grades 10 to 12 enrollment from 1996-97 to 1999-2000.

Availability of AP Courses. As measured by the number of different subjects in which students from a school took an AP exam, the availability of AP instruction continues to vary greatly among schools across California. As shown in Display 1-2 the number of subjects in which pupils took AP exams in May, 2000, ranged from one to 26. Students in 30 schools took an AP exam in only one subject.[2] Students in 3 schools took AP exams in 26 subjects. In the middle, students in 118 schools took exams in 10 or 11 AP subjects.

Ethnic Groups Differ Greatly in Participation in the AP Program. Ethnic participation in the Advanced Placement program has changed little from that observed in previous years.[3] African-Americans, Native Americans, and Hispanics participate at much lower rates than Asians and Whites. Display 1-3 shows the ratio of the percentage of all AP exams taken by each ethnicity to the percentage of high school enrollment of that ethnicity. As can be seen, there has been little change over the last four years. Asian participation is more than two and a half times what it would be if their participation were proportional to their enrollment. African-Americans, Native Americans, and Hispanics participate at rates from 30% to 61% of proportionality. White participation is almost exactly proportional to their enrollment in high schools across the State.

AP Subjects Taken. Growth since 1996-97 in total AP exams taken has not been limited to a few subjects—every subject has grown except "Latin: Literature." As shown in Display 1-4, the most spectacular increases have been in Statistics (+313%), Environmental Science (+268%), and Computer

[2] The ETS exam data does not tell us how many schools there were in which no students took an AP exam, only that students in 817 schools took an exam in one or more subjects. According to the California Department of Education, there were 985 diploma-granting public schools in 1999-2000 that enrolled more than 300 students. Thus, of schools with more than 300 students, students in 168 of them did not take any AP exams.

[3] Ibid.

* Please refer to the Appendix on page 43 for all displays

Science A (+134%). Among the subjects with the largest numbers of participants, English Language & Composition (+95%), U. S. Government & Politics (+51%), Spanish Language (+41%), and European History (+69%) have grown most rapidly. The stalwarts of the AP Program (U. S. History, English Literature & Composition, and Calculus AB) have grown substantially in absolute numbers, but the percentage increases have been less than average because of the already high level of participation in 1996-97.

Exam Results. Along with dramatic growth has come a slight erosion in test scores—overall, the average score is down 2.4% (from 3.04 to 2.97) since 1996-97.[4] Display 1-4 shows that among the subjects with more than 1,000 exams statewide, the greatest test score declines in May, 2000, were experienced in Art Studio General (-9.0%), French Language (-7.9%), U.S. Government & Politics (-6.4%), European History (-5.7%), and Macroeconomics (-4.3%). The greatest gains were in Computer Science A (+8.6%), Physics C Mechanics (+3.7%), and Calculus AB (+2.4%).

As was found in 1997-98, schools varied greatly in 2000 in their ability to achieve "passing scores" of 3 or higher. Display 1-5 shows the number of schools in terms of the percentage of AP exam scores that were "3" or higher. Nearly half (396) of the 817 schools had between 40% and 70% of their scores at the passing level or higher, while 158 schools had fewer than 40% passing and 183 schools achieved a 70% or higher passing rate.

Female Participation Continues to Exceed Male Participation. Statewide, female students in the AP program outnumbered males in 1999-2000 by 57% to 43% in terms of the number who took one or more AP exams. These findings are consistent with the data in a 1997-1998 study which found that the median percentage of female enrollment in all AP classes in California was 56.6%.[5]

In sum, increasing competition to gain admission to the low-priced University of California colleges, law suits over the equity of access to AP courses, and general concern about educational quality have fostered a great increase in interest in the Advanced Placement program in recent years, evidenced most clearly by the spectacular rise since 1996-97 in the number of AP exams taken. However, the growth of AP has not ameliorated the long-standing problems in the program in California including uneven availability of AP courses, disproportionate under-participation of ethnic minorities and males, and greatly varying exam performance among schools that is closely linked to the socio-economic level of the school. In addition, growth has been accompanied by a decline in exam scores, suggesting that the pressure to expand AP courses has weakened the overall quality of the instructional programs or that less well-prepared students are taking the classes, or both.

Program and Performance Variation

As indicated above, the study of the AP program in 1997-98 in California revealed that AP exam performance was closely tied to the socio-economic characteristics of the school—generally, the higher the economic level of the student body, the better the performance. But this general trend masks important variation among similar schools. As shown in Display 1-6, there were schools with relatively high economic status that performed poorly on the exams, and there were schools with large populations of low-income students that performed relatively well. The record data used in the first study provided few clues as to why these anomalies exist.

It is often suggested that it is particularly difficult for small (frequently rural) schools to offer AP courses because there are not enough qualified students to

[4] AP exams are scored from 1 to 5, with 5 being the highest score. A score of 3 is known as a "passing" score and may earn a student course credit and/or advanced placement in college.
[5] Ibid.

financially support AP classes. Generally, it is argued that the larger the school, the greater its ability to provide options and enlist specialized resources (such as a Chemistry teacher with a masters degree in the subject) to provide advanced coursework. The 1997-98 research found that, indeed, many small schools have minimal or no AP programs, but it was also observed that there are small schools with robust AP programs, offering as many seven different AP subjects. In addition, it was found that there is little or no relationship between school size and performance on the AP exam. As shown in Display 1-7, there were some small schools that scored well and some that scored poorly, while there were also large schools that scored high and low. It is not clear what enables some small schools to offer large, high-quality AP programs (while others with the same socio-economic characteristics do not), and what causes some large schools to have programs of low quality (at least as measured by exam results) and minimal scope, while other large schools (similar in SES characteristics) have large, successful programs.

Scope and Methodology of the Phase II Study

To acquire a better understanding of the overarching trends and underlying anomalies, the Institute decided to conduct a detailed investigation in a carefully selected sample of schools and AP classes.

The primary research objectives were (1) to describe the characteristics of AP classes in a variety of socio-economic and school-size settings and (2) to see if certain characteristics (or sets of characteristics) are associated with high and low performance (while controlling for socio-economic factors).

Sample Design

A sample of 360 AP classes was selected as follows:

1. From eight Educational Testing Service (ETS) diskettes containing about 99,000 school-level records of performance on AP exams in the Spring of 1999, all public schools that had at least seven test results in one or more of five AP subjects were selected. The five subjects were English Literature & Composition, Calculus, U. S. History, Chemistry, and Spanish. (In May, 2000, tests in these five subjects accounted for 52% of all AP exams taken in California public schools.) The number of selected schools per subject was as follows:

Subject	Number of Schools
English Literature & Composition	618
U. S. History	587
Spanish Language	542
Calculus	521
Chemistry	228

2. The percentage of scores of "3" or higher was calculated for each school (for Spanish Language, the percentage of scores of "4" and "5" was used because the overall level of scores was much higher in that subject). Within each subject, schools were assigned to six groups according to performance. The six groups are: bottom 1/8 of schools, next 1/4 of schools, next 1/8 of schools, next 1/8 of schools, next 1/4 of schools, top 1/8 of schools.
3. Schools were classified into quartiles according to an "SES index" (using CBEDS data) which consisted of the average of percentage of students on AFDC, percentage of students eligible to receive free or reduced-price lunch, and percentage LEP.
4. The six categories of performance and the four categories of SES were cross-tabulated to yield 24 cells.
5. Within each cell, schools were grouped into three size groups (small: <1,000; medium: 1000-1999; and large: >1999). Thus, for each subject, there were 72 strata (6 x 4 x 3 = 72)

TABLE 3 Within Each AP Subject

AP Exam Performance in Subject — Percentiles Based on Percent Of Scores of 3 or Higher

4 SES Groups	1/8 Extremely Low	2/8 Very Low	1/8 Low	1/8 High	2/8 Very High	1/8 Extremely High
1/4 Very Low	S/M/L					
1/4 Low						
1/4 High			72 schools per subject			
1/4 Very High						

6. Sample schools were selected at random within the 72 strata for each subject. If there were no schools of a particular size in a cell, a school was selected from the next closest size in the same half of the performance spectrum (the lower half or the upper half). The sampling frame can be summarized as shown in Table 3.

Sample Response

Each selected school was telephoned to identify a teacher of the AP subject (if there was more than one teacher of the AP subject, one was selected at random). Extensive follow-up efforts were made to maximize the response rate. The response was as shown in table 4.

Thus, the data base consists of 286 classes in five different subjects. There are 220 schools in the sample. Forty-five schools have more than one class in the sample, as follows: 35 schools have two classes; nine schools have three classes; and one school has four classes. The reason for the large number of schools with multiple classes is that some strata had few schools to select from—in some cases only one (for example, there are few small schools in high SES areas with low test scores).

The selected schools and the AP subjects are shown in Appendix 1. Also displayed in Appendix 1 are the sample strata for which a questionnaire was returned, and the strata for which no questionnaire was completed.

TABLE 4

Subject	Sample Size	Questionnaires Returned: Number	Questionnaires Returned: Percentage
Calculus	72	63	87.5
U. S. History	72	60	83.3
Chemistry	72	58	80.6
English Literature	72	56	77.8
Spanish Language	72	49	68.1
Total	360	286	79.4

Hypotheses and Research Questions

The questionnaires were designed to elicit information about the class, the teacher, and the school on dimensions that are believed to be related to student performance. The selected dimensions came from research findings, expert opinion, and informed speculation.

Sources of research dimensions. The report of the National Commission on Teaching and America's Future [6] concludes that teacher expertise—developed through high quality and extensive training—is one of the most important factors in determining student achievement. Hence, the AP teachers were asked a number of questions about their educational background and specific training in the AP subject.

[6] Darling-Hammond, L., *Doing What Matters Most: Investing in Quality Teaching*, The National Commission on Teaching and America's Future, November, 1997.

The ACLU filed a lawsuit against the State of California in 1999 concerning the equity of access to AP classes around the state.[7] It also convened a group of University of California education professors to develop a program of action to overcome the alleged inequities. The team produced a thirty-page report entitled, "Remedying Unequal Opportunities for Successful Participation in Advanced Placement Courses in California High Schools—A Proposed Action Plan."[8] The team's recommendations were based on research findings, theories of school improvement, and common sense. The goal of the plan was to "enable schools to create an infrastructure that will sustain a vigorous AP program" so that all high schools in California "offer a rigorous academic curriculum with sufficient opportunities for their students to participate successfully in coursework that will allow them to qualify for California's most competitive public universities."

Many of the recommendations of the UC team served as the basis for dimensions addressed in the AP teacher questionnaire. For this reason, it is worthwhile to outline the "Proposed Action Plan" in some detail:

1. Develop a College-Going Culture.

- Such a culture would include teachers and counselors who are trained to promote college aspirations among students and parents, and who would provide them with information and help in navigating college admission procedures.
- Establish "advisory classes" to help students achieve success in high school, gain access to AP classes, and choose and apply to colleges.
- Make available appropriate "tools for college counseling."
- Establish partnerships with colleges to engage college faculty in developing the "college-going culture" in the high school.

2. Provide Rigorous Academic Curriculum.

- Offer a minimum of six AP courses at all high schools
- Prepare students in the middle grades so that they are able to take college preparatory algebra in the 9th grade as the first prerequisite for AP math and science courses.
- All 9th grade students must be enrolled in college-prep Algebra (or a higher level mathematics course).
- Offer all students the opportunity to take all of courses required for CSU/UC admission (the A-G requirements).
- Provide up-to-date textbooks and other course materials.
- Provide adequate science labs.
- Provide necessary computer hardware and software.
- Make arrangements with local community colleges to provide college level courses and utilize community college faculty to teach college prep and AP courses in hard-to-staff schools.
- Provide ample professional development to enable teachers to teach the college-level AP courses.
- Create a core of specially educated "college opportunity teachers."
- Adopt policies that require teachers to teach both AP and non-AP classes.

3. Provide Supplementary Academic and Informational Support for AP Preparation and AP Course taking.

- Provide after-school and Saturday academic classes, tutoring, counseling, and mentoring.
- Establish AP "backup" classes.

[7] Daniel v. California, No. BC 214156.
[8] Publish January 10, 2000, the action plan was prepared by Jeannie Oakes (UCLA), John Rogers (UCLA), Patricia McDonough (UCLA), Daniel Solorzano (UCLA), Hugh Mehan (UCSD), and Pedro Noguera (UCB).

- Provide "summer bridge" classes.
- Provide summer AP-prep classes.

4. Create a Multicultural College-Going Identity.

- Establish professional development programs that prepare teachers to connect AP classes to a multi-cultural curriculum.
- Utilize community and school-based mentoring programs.

5. Establish Family-Neighborhood-School Supports.

- Offer parents the opportunity to participate in seminars about the benefits of AP courses and college access.
- Provide to parents a report card on student progress toward college.

Factors addressed in the Teacher Questionnaire. Clearly, in a brief (5-page), self-administered questionnaire it is difficult to obtain meaningful information on many of the elements recommended by the UC team, plus on other dimensions of interest. In many cases, the teacher's perception of the dimension is the best that could be obtained. Also, to avoid making the questionnaire so long that few teachers would be willing to complete it, the study had to narrow its focus. The final teacher questionnaire (contained in Appendix 2) addressed the following topics:

1. Teacher background
   - Gender, ethnicity, college major, college minor, masters degree, doctorate, attendance at AP Institutes, attendance at AP workshops, teaching experience, AP teaching experience.
2. Articulation
   - Meetings with feeder schools, adequacy of efforts working with feeder schools, knowledge of vertical teaming, use of vertical teaming.
3. Resources
   - Availability of teacher preparation time, financial support by district, adequacy of instructional materials, use of textbook and currency of the edition, existence of an AP class budget and amount, availability of graphing calculators in calculus, availability of labs in chemistry, availability of necessary equipment in Spanish class.
4. Composition of the class compared to composition of the school
   - Class size, ethnicity, gender, grade level, English language learners.
5. Preparation of students for the AP class
   - Perception of student preparation, major gaps in preparation, prerequisite course requirements
6. Requirements for, and selectivity in, admission to the AP class.
   - Course grade requirements, teacher recommendations, exam scores, summer/intercession projects, exclusion of students who are not qualified, exclusion of students because class was full.
7. Policies and practices regarding the AP exam
   - Expected number of students to take exam, whether exam is required, perception of importance of taking exam, whether exam should be required if no cost, pressure on the teacher to achieve high AP exam scores.
8. School support
   - Principal attitude toward AP classes, faculty attitude toward AP classes.
9. Parent's knowledge of the benefits of the AP program
   - Teacher perception of parent knowledge

10. Counseling

- Effectiveness of counselors in helping students from low-income families go to college, teachers role in counseling.

11. Instructional Methods

- Extent of taking of practice AP exams, use of student -group projects, use of weekend or after-school group sessions with the teacher, use of individual tutoring outside of class, instructional modes used (lecture, small group, individual) in class, differences between AP classes and non-AP classes in teaching methods.

The questionnaire included several open-ended questions which elicited a wealth of information about the problems associated with AP classes, the "front-burner" issues in the school regarding Advanced Placement, and ways to improve the program. Also, teachers often wrote comments on questions to clarify the closed-end responses. As the commentary was informative, one section of the report refers to this material.

Limitations and Caveats

Several problems in this study need to be delineated at the outset:

1. There are all the usual problems and weaknesses associated with self-administered questionnaires. While the questions were thoroughly field-tested, the diversity of schools makes uniformity of understanding practically impossible. For example, to some teachers of English Literature, all of their students are "English Language Learners." Scale problems are obvious in many items.

2. Open-ended questions elicited a wide range of answers. Some of these contradicted the responses to objective questions. This was particularly evident in responses that described student preparation for AP courses (eg. AVID programs) but responded negatively to questions regarding articulation or vertical teaming. Similarly, AP teachers' responses to objective questions regarding resources and facilities did not show "statistically significant" responses; however, open-ended responses more often reflected a concern with outdated texts, lack of materials and supplies as well as a concern for facilities (Chemistry)

3. Some schools required the student to complete the basic (or honors) course in the subject course prior to taking the AP course, while others did not. The questions regarding prerequisites did not adequately differentiate between types of prerequisites and preparation for the course, an issue that may need to be better analyzed.

4. The sample was selected based on test performance in 1999; the analysis was done using test results for 2000. Since the questionnaire was administered in the Spring of 2000, this at least guarantees that the teacher was teaching the AP subject in the same year as the test was given. However, the different test year changed the sample slightly—a school that was selected because it had low scores in 1999 may have moved up a notch or two (or three) in 2000. The analysis is based on the 2000 scores and not the 1999 scores. The distribution of respondents among strata contained in Appendix 1 is based on 2000 scores. The weighting of cases is based on the 1999 test results.

Chapter 2 • Characteristics of Advanced Placement Classes

This chapter examines the characteristics of Advanced Placement classes in terms of the dimensions outlined in Chapter 1 that theory, research, or expert opinion suggest may be linked to student achievement. The principal organizing variable is the socioeconomic level of the school, but AP subject and school size are also considered. All data concern the five AP subjects: English Literature and Composition, Calculus, U. S. History, Chemistry, and Spanish Language which accounted for 52% of all AP exams taken by California public school students in May, 2000.

Teacher Background

Gender. As shown in Display 2- 1, there are significant differences in the gender of AP teachers across the five subjects.[1] AP English Literature, Chemistry, and Spanish have more female teachers, while AP U. S. History and Calculus have more male teachers. Compared to the population of high school teachers in each subject area, Spanish and Chemistry AP teachers differ from the general population—(1) there are more male and fewer female AP Spanish Language teachers than the total population of foreign language teachers; and (2) there are more female and fewer male AP Chemistry teachers than the high school population of physical science teachers.[2]

Display 2-1 also shows that English Literature and Calculus classes in High-SES schools are more often taught by male teachers than these classes in Low-SES schools.

Ethnicity. The ethnic distribution of AP teachers among schools by SES level is shown in Display 2-2. The key findings are:[3]

- African-American AP teachers are highly concentrated in VeryLow- and Low-SES schools—in fact, the data suggests the possibility that there are no African-American AP teachers in the five subjects in High and Very High SES schools.
- Asian-American AP teachers are also highly concentrated in Very-Low- and Low-SES schools.
- Hispanic AP teachers are substantially under-represented in High- and Very-High-SES schools and over-represented in Low- and Very-Low-SES schools.
- White AP teachers are disproportionately over-represented in Very-High-SES schools.

Despite the concentration of minority AP teachers in lower-SES schools, the majority of AP teachers in these schools are White. Seventy-one percent of the AP teachers in Very-Low-SES schools, and 62.4% in Low-SES schools, are White.

As discussed later, the participation of Hispanics and African-American students in AP classes is disproportionately low, even in Low- and Very-Low-SES schools. Thus, in lower-SES schools it appears that it is frequently the case that White teachers are teaching White (and Asian) pupils even though the student population includes many Hispanics and African-Americans. This observation suggests the need to increase the numbers of Hispanic and

[1] All differences mentioned in the text are statistically significant differences, except where it is explicitly stated that the difference is not statistically significant.

[2] Female AP teachers by subject compared to the subject-area population is as follows (high school population of teachers/ AP estimate): English/ AP English Literature(68.1%/65.6%); Social science/AP U. S. History (42.4%/42.2%); Mathematics/Calculus (41.9%/36.1%); Physical science/Chemistry (37.3%/62.0%); Foreign language/Spanish (69.6%/58.9%). The very great difference in Chemistry may be a sampling error. The difference in Mathematics/Calculus is significant at the .016 level.

[3] These findings compare the distribution of AP teachers to a hypothetical distribution that is proportional to the number of AP teachers of each ethnicity. For example, if 10% of all AP teachers are Hispanic, then a proportional distribution would have Hispanic teachers constituting 10% of all AP teachers in Very High SES schools.

* Please refer to the Appendix on page 43 for all displays

African-American teachers in lower-SES schools who teach AP classes.

Teaching Experience. Display 2-3 shows total years teaching and number of years teaching the AP subject by school SES level and school size. The key observations are:

- In Very-Low-SES schools, AP teachers have substantially less teaching experience and substantially less experience teaching the AP subject than AP teachers in Very-High-SES schools.
- In small schools (less than 1300 students) and very large schools (more than 3000 students), AP teachers tend to have less teaching experience generally, and less experience in the AP subject, than teachers in middle-sized schools (1301 to 2999).

These findings are important because as will be shown in the next chapter, years teaching the AP subject is associated with performance on the AP exam across all SES levels.

Possession of A Masters Degree. Three out five AP teachers in the five subjects possess a Masters degree. Appendix Display A-2 shows the field of Masters degree within AP subjects. Not surprisingly, the great majority of Masters degrees are in fields related to the AP subject taught. Because of the difficulty knowing what the differences are between the various named Masters fields, no analysis was done by field.

Display 2-4 shows the incidence of Masters degrees by school size. As was the case with number of years teaching the AP subject, small schools (1300 and less enrollment) and very large schools (3000 and more) have fewer AP teachers in the five subjects who hold a Masters degrees. In the middle-sized schools (1301 to 2999), between 63.7% and 72.8% hold a Masters, while in the small and very-large schools only between 28.0% and 40.2% of the AP teachers hold a Masters degree.

Teachers of English Literature and Calculus are more likely to have a Masters degree than teachers of U. S. History, Spanish, and Chemistry (see Display 2-5). Whereas 72.8% and 65.5% (respectively) of the teachers of the former subjects possess a Masters degree, only 52.1%, 52.9%, and 44.0% (respectively) of the teachers of the latter subjects hold the advanced degree.

Display 2-6 shows the percentage of teachers who hold a Masters degree for SES groups of schools within each subject. The key findings are:

- In Calculus, Spanish, and English Literature, AP classes in higher-SES schools are more likely to have a teacher who possesses a Masters degree than classes in lower-SES schools.
- Significantly fewer of the AP Spanish teachers in the lower-SES schools possess a Masters than those in higher-SES schools (19.2% versus 83.3%).

The impact of possession of a Masters degree on student performance will be assessed in the next Chapter.

AP Summer Institutes and Workshops. The College Board sponsors week-long Summer Institutes and one- or two-day workshops, usually held on a college campus, to train AP teachers. In the survey, AP teachers were asked how many of these training events they have attended.

Fifty-eight percent of the teachers had never attended a summer institute and 28.7% had never been to an AP workshop. The data (see Display 2-7) indicate the following:

- AP teachers in lower-SES schools have attended more summer institutes than teachers in higher-SES schools, but the latter have attended more workshops than the former.
- Teachers in very small schools (enrollment less than 801) have attended very few summer insti-

tutes compared to teachers in larger schools. Also, the small-school teachers (less than 1301 enrollment) have participated in significantly fewer workshops than teachers in mid-size schools (1301 to 2999).

Articulation With Feeder Schools and Prerequisite High School Courses

It is widely agreed that the foundation for success in AP courses is laid in the elementary and middle schools. To promote communication between AP teachers and teachers in the same field in the earlier grades, the College Board has established a program known as "Vertical Teaming." Also, it was pointed out in Chapter 1 that the UCLA experts consider adequate preparation in algebra in the ninth grade essential for later success in mathematics and the sciences.

The survey asked the AP teachers several questions about articulation with teachers in lower grades, including how many times they have met with teachers in feeder schools, their perception of the adequacy of efforts to help feeder schools prepare students for AP courses, whether they have heard of Vertical Teaming, and whether Vertical Teaming is a part of their school program in their subject area.

Meetings With Feeder School Teachers. Seventy-nine percent of the AP teachers said they had met with feeder-school teachers *zero* times during the current school year (the survey was conducted in May and June) "to discuss student preparation for their AP class." There was little difference among the five AP subjects in the number of meetings.

Very-Low-SES schools had significantly fewer meetings with feeder school teachers than schools in the other three SES groups. Display 2-8 shows the mean number of meetings and the difference between Very-Low-SES schools and the others.

Perception of Adequacy of Efforts to Help Feeder Schools Prepare Students for AP Courses. Teachers were asked, "How adequate are the efforts in your high school to help your feeder schools prepare students for success in AP [subject]?" The findings reveal a very strong correlation between the SES level of the school and the teachers perception of adequacy. To summarize Display 2-9:

- Large majorities in the lower SES schools indicted that "much more" effort is needed in working with feeder schools while only about a third of the teachers in High-SES schools and about 20 percent of the teachers in Very-High-SES schools responded that "much more" effort is needed.

Awareness of Vertical Teaming. The College Board has worked hard to foster "Vertical Teaming" which is based on the idea that an AP course "should not be an isolated course but rather a planned program of teaching skills and concepts over several years and that a planned program is best achieved by the vertical cooperation of teachers working together to coordinate their teaching efforts."[4] In English, for example, "a school may choose to include a teacher from each grade, 6 through 12…[and] when schools are extremely large, it might be useful to form more than one team, each with representation from grades 6 through 12."

The survey found that only slightly more than half (56.5%) of the AP teachers had heard of Vertical Teaming. Familiarity with the approach did not vary greatly across the SES Groups or by school size. However, there were significant differences between AP subjects in awareness of Vertical Teaming as illustrated in Display 2-10. The key observations are:

- Seven out of eight English Literature teachers had heard of Vertical Teaming and six out of ten Calculus teachers were familiar with the program.
- But less than half of the teachers in U. S. History (44%), Chemistry (25%), and Spanish (40%) indicated they had heard of Vertical Teaming.

[4] *A guide for Advanced Placement English Vertical Teams*, The College Board Advanced Placement Program, no date.

Implementation of Vertical Teaming. Teachers who indicated they had heard of Vertical Teaming were asked whether it was a part of the program within the subject area in their school. Nearly 80% of all AP teachers who had heard of Vertical Teaming said that it was not part of their school program in the subject area. As shown in Display 2-10, nearly half of the Spanish teachers responded that they had implemented Vertical Teaming, but three out of four or more of the teachers in the other subjects said it was not a feature of their academic department.

Preparation of Students for the AP Course

According to the College Board, success in college-level AP courses depends primarily on the adequacy of student preparation. Students who do not have the necessary groundwork in mathematics, science, and language arts often find the pace of AP courses overwhelming. As a consequence, it is not uncommon to find students dropping out of the AP course after three or four weeks into the semester. Two questions on the survey addressed teachers' perceptions of the adequacy of student preparation.

Perception of Level of Preparation of Students to Take the AP Course. Teachers were asked how well prepared their students were to take the AP course that they were teaching. Overall, many teachers found the students were not well-prepared—only 56% of all teachers said their students were well-prepared. U. S. History teachers were least happy with their students preparation—less than half thought their students were well-prepared (see Display 2-11).

Again we find statistically significant differences in the views of teachers in schools serving different socio-economic strata.

- Significantly fewer teachers in Very-Low-SES schools thought their students were well-prepared than teachers in Low-SES schools who, in turn, were significantly less satisfied with the preparation of their students than teachers in the higher-SES schools.

Large Gaps in Preparation. Teachers were asked if there were any "large gaps (in other words, consistent deficiencies)" in the preparation of students for their AP class. Those teachers who replied, "Yes," were asked to describe these gaps. These descriptions are outlined in Chapter 4 .

A large percentage (57.9%) of all teachers said there were large gaps in their students' preparation. As observed with respect to the percentage of students who were well prepared, U. S. History teachers were least pleased with the breadth of preparation, with nearly three out of four indicating that there were large gaps in preparation. However, only one-third of Chemistry and two-fifths of Calculus teachers found large gaps. About three out of five Spanish and English Literature teachers indicated that there were large gaps (see Display 2-12).

Striking differences are found in the views of teachers from the SES strata:

- An extremely high percentage (86.3%) of teachers in Very-Low-SES schools responded that there were large gaps in their students' preparation.
- More than seventy percent of teachers in Low-SES schools indicated the students had "consistent deficiencies."
- About 40% of High- and Very-High-SES teachers found large gaps in their students' preparation.

Admission to AP Classes

One way to improve the chances of achieving high scores on the AP exam is to be very selective in admitting students to the AP class. (Another way, which will be considered below, is to restrict the students who take the exam to those who will do the best.). AP teachers vary in the criteria they utilize to admit students. In some cases, the criteria are imposed by

the school, and in others they are at the discretion of the teacher.

In interviews, it was found that the admission process is very complex. Many teachers say they have an "open enrollment" policy—however, class-size limitations may circumscribe the open enrollment policy, bringing into play unstated criteria. Other teachers apply well-defined criteria such as earning a certain grade in a prerequisite course or having a teacher recommendation. But the AP teacher may himself be the teacher of the prerequisite course, or the only one who can provide a "recommendation."

A number of questions were asked to assess the admission criteria. These are reported in the following sections.

Admission of "Unqualified" Students. As an indicator of whether there is a true "open enrollment" policy, teachers were asked whether there were any students *who wanted* to take the AP class this year but were not admitted because they were *not qualified.*

Overall, 80.7% of the AP teachers said that no students were not admitted because they were not qualified. However, there was significant variation among AP subjects. As shown in Display 2-13, 31.3% of teachers of AP Chemistry said they did not admit some students because they were not qualified, but only 7.9% of Calculus teachers gave this response. The other three subjects were at about the overall mean.

In terms of differences among SES groups, the Very-High-SES-school teachers slightly more often said that this year they did not admit some students because they were not qualified. However, teachers in High-SES schools most often said they did not exclude any students because they were unqualified. Eight out of ten teachers in Low- and Very-Low-SES schools said they did not exclude any students from their AP classes this year because they were not qualified. (It should be noted that a teacher may not have not admitted any unqualified students because no such students applied for admission to the AP class—that is, not admitting unqualified students may be the policy, but there was no opportunity to exercise it. Interviewees suggested that student self-selection was an important part of the admission process in many schools.)

In the next chapter, the differences in exam performance by classes that excluded and did not exclude unqualified students will be examined.

Denying Admission To Qualified Students Because The Class Was Full. There is often considerable competition for admission to AP classes, so we wanted to find out to what extent qualified students were being excluded because of lack of space in the class. As it turned out, only 8.2% of the teachers said that qualified students were turned away because of class-size limitations. There were no noteworthy differences between AP subjects or SES groups on this dimension. As would be expected, in smaller schools very few teachers had to turn away students because the class was full (1.3% in schools from 0 to 800, and 0.5% in schools from 801 to 1300).

Grade Requirements for Admission to AP Classes. Only slightly more than half (56.4%) of the AP teachers reported that students were required to achieve a certain grade in a prerequisite course to be eligible for admission to an AP class. There were some interesting differences as follows:

- Only 32% of U. S. History teachers said they required a minimum grade in a prerequisite course, while between 61% and 69% of the teachers in the four other subjects said they required a grade.
- In the largest schools (2400 and more students), 44% of the AP teachers responded that a minimum grade was required, while about 66% of the teachers in the smaller schools had grade requirements.

- 64.6% of the teachers in the higher-SES schools required a minimum grade in a prerequisite course, while 47.1% of teachers in lower-SES schools had such a requirement.

Teacher Recommendation as a Requirement for Admission to An AP Class. About half of the teachers said a teacher recommendation was required for admission to the AP class. Significant differences were as follows:

- Teachers in higher-SES schools were slightly more likely to require a teacher recommendation than teachers in lower-SES schools (55.7% compared to 45.3%).
- Only 36.3% of Calculus teachers said they required a teacher recommendation, while 52% to 58% of teachers in the other four subjects said they required a recommendation.

Composition of AP Classes

This section examines the ethnic, gender, grade level, and language proficiency composition of AP classes.

Ethnicity. In the Institute's first report, the ethnic composition of AP classes was evaluated by comparing the ethnic distribution of exam takers in a school to the ethnic distribution of school enrollment. We could not directly analyze ethnic enrollment in AP classes because that data was not available. In Chapter 1, the analysis of the ethnic distribution of exam takers was updated to the current year.

In the survey, we asked teachers to give the ethnic distribution of students in their classes. The results shown in Display 2-14 confirm the conclusions of the earlier study:

- African-Americans and Hispanics are considerably disproportionately underrepresented in AP classes. If they were to be enrolled in AP classes in proportion to their enrollment in the schools, their participation in AP classes would have to increase, on average, by about 100%.
- Asians are greatly over-represented in AP classes.
- White enrollment in AP classes, on average, is about proportional to their enrollment in the schools.

Display 2-15 breaks out the enrollment ratios by school SES level within ethnicities. The analysis suggests the following conclusions:

- African-Americans enrolled in Very-High-SES schools appear to have a higher rate of participation in AP classes than African-Americans enrolled in lower-SES schools. It is also possible that in Very-Low-SES schools, African-Americans enroll in AP classes at an even lower rate than their overall average.
- There is little or no difference across SES levels in the participation rates of Hispanics in AP classes.
- Asian participation in AP classes is extremely high in the Very-High-SES schools. Whereas their overall participation rate is 2.52, in Very-High-SES schools it is 3.33.
- Whites tend to have higher participation rates in Low- and Very-Low-SES schools than in Very-High-SES schools.
- Filipinos participate at about the same rate in all levels of SES.
- Pacific Islanders appear to participate at much higher rates in Low- and Very-Low-SES schools than in the higher-SES schools. The differences are quite large, as shown in Display 2-15.

A similar analysis was conducted of participation ratios by ethnicities within AP subjects. Shown in Display 2-16, the findings are as follows:

- African-Americans tend to participate less in Spanish and Chemistry than in Calculus, English Literature, and U.S. History.
- Asians participate at much higher rates in Calculus, Chemistry, and U. S. History than in Spanish

and English Literature, but they are disproportionately over-enrolled in all subjects.

- Not surprisingly, Hispanic participation in Spanish Language is much higher than their participation ratios in other subjects.
- White's participation ratio in Spanish is significantly lower than in the other subjects.
- Filipinos enroll in Chemistry and English Literature at greatly higher rates than the other three subjects.
- Pacific Islanders are disproportionately highly enrolled in U. S. history and English Literature and under-represented in the three other subjects.

Gender. In the Institute's first report, it was shown that females participate in AP classes in California public schools in a ratio of about 55:45. The survey results are consistent with the earlier findings: for the five subjects in total, female enrollment is 56.7%. But there are distinct gender differences by subject, as follows.

- Females hold majorities in Spanish (67.4%), English Lieterature and Composition (62.2%), and U. S. History (55.2%).
- Males hold majorities in Calculus (54.3%) and Chemistry (56.3%).

Further analysis shows that the gender pattern of enrollment in AP subjects is about the same for all levels of school SES. However, combining Very-Low- and Low-SES schools reveals that in Calculus, females and males are about equal in enrollment in the combined group of schools.

Comparing female enrollment within subjects, females in lower-SES schools have a statistically significantly higher percentage of enrollment in Spanish, Calculus, and U. S. History than do females in higher-SES schools. In Spanish the numbers are 71.3% compared to 63.9%; in Calculus, 50.4% versus 42.1%; and in U. S. History 57.5% compared to 52.6%.

English Language Learners. The AP teachers reported that overall in the four subjects (excluding Spanish Language), 9.7% of the students were English Language Learners (ELL). Significantly higher percentages of ELL are enrolled in Very-Low-SES schools:

- For AP classes in Very-Low-SES schools, it was reported that, on average, 18.1% of the students were ELL. This is significantly higher than in the other three strata which enrolled ELL as follows: Low-SES schools, 9.1%; High-SES schools, 7.6%; and Very-High-SES schools, 5.2%.
- Looking at the data by AP subject, U. S. History teachers indicated they had significantly fewer ELL in their classes (5.6%) than did teachers of Calculus (11.0%), English Literature (11.4%), and Chemistry (13.3%).
- Generally, the larger the school, the higher the percentage of ELL. The largest schools (3000 pupils and more) have significantly more ELL in their AP classes (20.5%) than the other school sizes. The other five school sizes ranged from 5.8% ELL to 10.4%, but the differences are not statistically significant.

Native Speakers in Spanish Classes. AP Spanish Language teachers were asked how many of their students learned to speak conversational Spanish in their home or community. The findings are:

- In the Very-High-SES schools, only 13.8% of the Spanish-Language-class students were reported to be native Spanish speakers; in contrast, in the Very-Low-SES schools, 76.9% learned to speak conversational Spanish outside of school. High-SES schools (60.2%) and Low-SES schools (63.5%) fell in-between.
- The correlation between the percentage of a school's student body that is Hispanic and the per-

centage of students in AP Spanish who learned Spanish at home is .734.

Student Grade Level. For the most part, English Literature is taken by twelfth grade students, U. S. History by 11th graders, Calculus by 12th graders, and Chemistry and Spanish enroll both 11th and 12th grade students. Two differences are noteworthy:

- There are more 11th grade students in English Literature in Very-Low-SES (31%) and Low-SES (19%) schools than in Very-High-SES schools (less than 1%).
- Also, there are more 11th grade students in Calculus in Very-Low-SES schools (20%) than in Very-High-SES schools (12%).

For all the SES strata, there are very few 9th and 10th grade students enrolled in any of the five classes—however, 10% of the enrollment in AP Spanish is in the two lower grades.

Resources

This section examines the resources available in AP classes, including class size, district financial support, class budgets, availability of necessary materials, and several resources that are unique to individual subjects (such as graphing calculators in Calculus).

Class Size. The average class size over all AP subjects and schools is 24.7 pupils. As shown in Display 2-17, class size varies somewhat systematically by SES level: the higher the SES, the higher the average class size. However, in terms of statistically significant differences:

- The mean class size in Very-High-SES schools is higher than in Low- and Very-Low-SES schools.
- The mean class size in High-SES schools is higher than in Very-Low-SES schools.

Looking at class size differences across subjects, Display 2-17 shows that U. S. History classes are larger, on average, than those in all other subjects, and that Chemistry classes are smaller than those for all other subjects.

Display 2-18 contains a comparison of class size by school size. The small schools tend to have smaller class sizes, but statistically significant differences are not systematic. The correlation between school size and class size is positive, but it is only .10.

Breaking the data down further, Display 2-19 shows class size by SES groups within AP Subjects. The key findings can be summarized as follows:

- In English Literature and Spanish, both Very-Low- and Low-SES schools have smaller class sizes than the higher-SES schools. Also in Calculus both of the lower SES groups have smaller class sizes than the Very-High group.
- In Chemistry and U. S. History, the average class sizes do not vary systematically by SES.

Financial Support of the District Administration. It was not possible in a brief questionnaire to adequately address central office policies concerning the operation of AP programs in the district's high schools. The AP teachers were asked, however, to give their view of the financial support provided to their high school's AP program by district administration. Overall, 20% said financial support was excellent, 38% adequate, 29% minimal, and 14% none—a rather low level of approval for district support. By SES groups:

- There was a slight tendency for AP teachers from lower-SES schools to give a lower rating to the financial support of district administration than higher-SES teachers. Forty-four percent and 50% of teachers in Low- and Very-Low-SES schools, respectively, rated district support minimal or none, while 36% and 39% in High- and Very-High-SES schools, respectively, viewed district

financial support as minimal or none. (Twenty percent of the teachers in Very-Low schools, and 9% of the teachers in Very-High-SES schools, said there was *no support.*)

Discretionary Budgets. Only one in four AP teachers reported that they had a discretionary budget for their AP class. Lower-SES schools are more likely to have a discretionary AP-class budget (36%) than higher-SES schools (21%). However, the average budget amount was greater in the higher-SES schools ($479) than in the lower-SES schools ($352).

Lack of Instructional Materials Necessary to Prepare Students for the AP Exam. Teachers were asked if they lacked any instructional materials that they needed to prepare students for the AP exam and, if they did, what these materials were. A little less than half (43.2%) of all teachers said they were lacking necessary instructional materials. There are important differences by SES level however:

- Sixty percent of teachers from Very-Low-SES schools said they lacked necessary instructional materials, while only 34% from Very-High-SES schools responded in the same way (see Display 2-20).
- The Very-Low-SES teachers in Chemistry and Spanish exceeded seventy percent in indicating they lacked materials. Also, 75% of the teachers in Low-SES schools said they lacked necessary instructional materials in Chemistry.

Graphing Calculators in Calculus. An essential tool in calculus is the graphing calculator. AP Calculus teachers were ask if any student in the class did not have "his or her *own*" graphing calculator and, if they responded "yes," they were asked how many students do not have their own graphing calculator. (There may have been some confusion over the word "own"—some teachers who said the school lent students a calculator for the year felt that the student did not have his or her "own" calculator—but this interpretation was not widespread.) At any rate, Display 2-21 clearly shows that students in Low- and Very-Low-SES schools are significantly less likely to have their own graphing calculator.

- On average, one-third of the students in AP Calculus classes in Very-Low-SES schools did not have their own graphing calculator.
- Twenty-two percent of the students in Low-SES schools lacked a personal graphing calculator.
- Only about 5% of the students in higher-SES schools were without their own calculator.

Equipment in Spanish Classes. AP Spanish teachers were asked if they lacked any equipment in the class that they felt "is necessary to thoroughly prepare the students for the AP Spanish exam." Overall, 44% responded "yes" to this question.

There was a strong relationship with school SES in the responses to this item as shown in Display 2-21.

- Nearly 82% of teachers in Very-Low-SES schools and 40% in Low-SES schools said they lacked necessary equipment. In contrast, about 30% of the teachers in the higher-SES schools indicated that they lacked equipment.

Lab Facilities in Chemistry Classes. There were no statistically significant differences by school SES regarding the availability of adequate lab facilities, but the lower-SES schools slightly less often indicated that these facilities were adequate.

The AP Exam

The AP exam is an integral part of the AP program, providing feedback for both teachers and students.

Teacher Views of the Importance of the AP Exam. Teachers were asked how important is it that students take the AP exam. Three-fourths responded that it is "very important," 24% indicated it is "somewhat important," and 2% replied that it is "not important." There are no great differences between subgroups, except that teachers in Very-Low-SES schools were

a little more likely (90%) to say that taking the exam is "very important."

Is Taking the Exam Required? Schools cannot require students to take the AP exam because it costs about $75 (the price rises slightly each year). But some schools subsidize the fee, and there are state, federal, and College Board programs to reduce the cost. In fact, some schools require that students take the exam, others strongly encourage it, and others have adopted policies denying extra grade points for taking an AP course if the student fails to take the exam (however, CSU and UC calculate the grade point averages for their applicants and award the extra point even if the student has not taken the exam).

In the survey, only 30% of the teachers responded that students are required to take the exam. In Very-Low-SES schools, however, 53% of the teachers said that students were required to take the exam (fee subsidies are targeted on low-income students).

Should the Exam be Required if there were No Cost? The response to this question suggests that cost is a significant factor in whether the exam is required.[5] Seventy-four percent of the teachers responded that the exam should be required if there were no cost—but still, 26% opposed it. Teachers in Very-High-SES schools were most often opposed to requiring the exam (39%), while fewer teachers in Very-Low-SES schools were against requiring the exam if it were free (16%). But the pattern is not consistent because teachers in High-SES schools were very much in favor of requiring the exam if there were no cost (85%), while teachers in Low-SES schools opposed requiring it almost as often (31%) as teachers in the Very-High-SES schools.

How Many Students Take the Exam? In the previous study of the AP program by the Institute it was found that in the nine most popular AP subjects between 60% and 75% of the students took the exam, depending on the subject. As shown in Display 2-22, survey teachers reported higher percentages would take the exam than found in the earlier study.[6] Overall, the teachers said that 84% of the students enrolled in the AP courses would take the exam.

Differences between schools by SES level and between AP subjects were not great. The most noteworthy difference is that students in very small schools were less likely to take the exam (72%, see Display 2-22).

Pressure to Achieve High Exam Scores. As indicated by the responses, nearly one of five AP teachers (18.1%) feels "a lot of pressure" from school administrators to achieve high exam scores, while nearly two of five (38.6%) feels "no pressure." Display 2-3 shows that teachers in higher-SES schools tend to feel more pressure than teachers in the lower-SES schools. Only 3.2% of teachers in Very-Low-SES schools said there was "a lot of pressure" from school administrators to have the students achieve high AP exam scores.

Instructional Methods

It is, of course, difficult if not impossible, to discern differences in instructional methods through a self-administered questionnaire. Nevertheless, since the ACLU experts placed strong emphasis on certain activities such as after-school and Saturday classes and individual tutoring as keys to success in low-income schools, questions about these activities were included in the survey instrument. In addition, in an open-ended question, teachers were asked to describe

[5] Students who are taking several AP courses face substantial costs. Students who think they will not do well on the exam often say it is not worth "wasting" $75. Students say they already have too many other exams (such as the SAT and subject achievement tests), giving low priority to the AP exams. Also, some students do not take the exam because, they say, the college they plan to attend does not give credit or advanced standing in the subject.

[6] Students must sign up for the exam in advance so the survey teachers had a pretty good idea of how many would take the exam. Also, a substantial number of the questionnaires were completed after the exam was given, so these should be fairly accurate.

any differences that exist in their teaching methods between AP classes and non-AP classes—these responses are discussed in Chapter 4.

Group Projects. The teachers were asked whether they assigned group projects requiring that students work together outside of class time. As can be seen in Display 2-24 teachers of English Literature and U. S. History are much more likely to assign group projects outside of class time than teachers of the other three subjects.

The data indicate that in English Literature and Spanish, teachers in lower-SES schools are more likely (90% versus 58%) to assign group projects than teachers in higher-SES schools (see Display 2-25). On the other hand, teachers of Calculus in higher-SES schools are more likely (46% compared to 28%) to make such assignments than those in lower-SES schools. However, in U. S. History, there is no difference between the two SES groups.

Weekend Group Sessions. Chemistry teachers (64%) are most likely to provide weekend group sessions, while Spanish teachers are least likely (4%). Calculus (40%), U. S. History (37%), and English Literature (29%) are in-between. No significant differences were found among SES groups in terms of the provision of weekend classes.

After-school Group Sessions. As with weekend classes, Chemistry teachers (82%) are most likely to provide after-school group sessions and Spanish teachers are least likely (33%). U. S. History teachers responded affirmatively almost as often (79%) as Chemistry teachers, while Calculus (57%) and English Literature (42%) teachers are in the middle. No significant differences were found among SES groups in terms of the provision of after-school classes.

Individual Tutoring Outside of Class. There are only small differences between AP subjects in terms of individual tutoring provided outside of class. U. S. History teachers are least likely (66%) to provide individual tutoring, while Calculus teachers are most likely (84%).

In U. S. History and Calculus, teachers in lower-SES schools (76% and 95%, respectively) are more likely to provide tutoring than teachers in higher-SES schools (54% and 76%, respectively). No significant differences were found in English Literature, Spanish, and Chemistry.

Instructional Modes. Teachers were asked to estimate the percentage of class time over the year that students spent in (1) whole class lecture and discussion, (2) working in small groups, and (3) working individually.

Display 2-26 graphically depicts the percentage of time in the three instructional modes. Spanish and English Literature teachers spend significantly less time in the lecture/class discussion mode than the teachers of other subjects, and correspondingly more time having the students work individually. Chemistry teachers have their students spend the least amount of time working individually.

There are few significant differences within AP subjects among the SES groups. But in Spanish, the teachers in Very-Low-SES schools report spending significantly more time in the lecture mode than teachers in High- and Very-High –SES schools (56% of class time compared to about 36%). It will be recalled that many more of the students taking Spanish in the Very-Low-SES schools than in higher-SES schools are native speakers.

Practice Exams. Virtually all (96%) of the teachers said that they give their students practice AP exams. English Literature teachers report spending more hours on practice exams than teachers of the other subjects (22 hours, on average, versus 16 for Spanish, 15 for U. S. History, 14 for Calculus, and 11 for Chemistry).

In U. S. History, teachers in Very-Low-SES schools report spending more time on practice exams than teachers in other SES groups (31 hours, on average, versus 15 in Low-SES schools, 12 in High-SES schools, and 9 in Very-High-SES schools). A similar statistically significant difference exists in Calculus, where Very-Low-SES schools spend 18 hours practicing, on average, compared to about 12 hours for the three other SES groups.

Counseling

AP Teacher Role in College Counseling. Fostering awareness of college opportunities and understanding of the application and financial aid procedures are considered important adjunct activities by the ACLU experts. Forty-six percent of the AP teachers responded that they provided some college counseling in their AP classes. The percentage was higher in the Very-Low-SES and Low-SES schools (60% and 48%, respectively) and lower in the High-SES and Very-High-SES schools (39% in both).

Effectiveness of Counselors. Teachers were asked their view of how effective the counselors in the school were in helping students from low-income families go to college. Twenty-six percent reported that the counselors were very effective, 45% said they were somewhat effective, 8% said they were ineffective, and 18% indicated that they did not know. There were no noteworthy differences among SES groups.

Parent Knowledge of Benefits of AP Classes

Teachers' views of how knowledgeable parents are of the benefits of AP classes varied systematically by the SES level of the school. Fifty-eight percent of teachers in Very-High-SES schools felt that all parents knew of the benefits of AP classes and this drops steadily down to teachers in Very-Low-SES schools who reported that only 12% of parents were knowledgeable. It is also interesting that 12.6% of the teachers in Very-Low-SES schools indicated that they were not sure about how knowledgeable the parents were.

Principal and Faculty Support of AP Classes

Support of the Principal for AP Classes. The great majority (83%) of AP teachers responded that the Principal "strongly supports" offering AP classes in the school. Twelve percent indicated the principal "mildly supports" AP classes, only 5% said the principal was "indifferent," and none said the principal "opposes AP classes."

There is a small difference in the answers given by teachers in lower-SES schools, ten percent of teachers in Low-SES schools saying the principal is indifferent, and 7% in the Very-Low-SES schools also giving that rating. Finally, slightly more than one in four of the teachers in Low-SES schools indicated that the principal less-than-"strongly" supports offering AP classes.

Support of the Faculty for AP Classes. The teachers were more divided in their assessments of the support of fellow teachers in the school for AP classes. Only 51%, overall, said that "most teachers strongly support" offering AP classes, 37% said that most teachers "mildly" support AP classes, and 13% said they were indifferent. No one responded that most teachers oppose offering AP classes.

Teachers in the Very-Low-SES schools deviated most from the overall distribution of responses, with only 36% indicating that most teachers support AP classes and 21% reporting that most teachers in the school were indifferent about offering AP courses.

Summary of Key Findings

This study has revealed a number of interesting differences between AP classes in higher-SES schools and AP classes in lower-SES schools. The key findings are as follows:

- AP teachers in higher-SES schools tend to have more years of experience teaching the AP subject than teachers in lower-SES schools. As discussed in the next chapter, years of experience teaching the AP subject is strongly associated with student performance on the AP exam—the more experience, the higher the scores (all other things being equal).
- While most AP teachers have little or no contact with teachers in the feeder schools, AP teachers in very-low-SES schools tend to have even less contact with feeder school teachers. A related finding is that teachers in lower-SES schools significantly more frequently report that "much more" effort is needed in working with feeder schools than teachers in higher-SES schools.
- Only slightly more than half of all teachers had "heard of" the College Board program known as "Vertical Teaming." And of those who were familiar with the approach, 80% said it was not part of the AP program in their subject. No striking differences were found with respect to Vertical Teaming among the SES groups of schools.
- A surprisingly large percentage of AP teachers—44%—reported that their students were less than well-prepared for the AP class. And nearly 60% said there were "large gaps" or "consistent deficiencies" in student preparation. Dissatisfaction with student preparation was found to be strongly associated with the SES level of the school—teachers in lower-SES schools were much more likely than teachers in higher-SES schools to report that students were not well-prepared and there were large gaps in preparation.
- In terms of student ethnicity, participation in AP classes is highly disproportionate:

  1. African-Americans and Hispanics are grossly under-represented in AP classes. If they were to enroll in AP classes in proportion to their enrollment in the schools, African-American and Hispanic participation would have to increase, on average, by 100%. However, African-American students in very-high-SES schools appear to have a higher rate of participation than those enrolled in lower-SES schools. On the other hand, it appears that in very-low-SES schools, African-Americans enroll in AP classes at an even lower rate than their overall very low average. There is little or no differences across SES levels in the participation rates of Hispanic students in AP classes.
  2. Asian students are greatly over-represented in AP classes. Asian participation is extremely high in the very-high-SES schools. Whereas their overall participation rate is 2.52 (the ratio of the percentage of AP class enrollment to the percentage of school enrollment), in very-high-SES schools it is 3.33.
  3. White enrollment in AP classes is, on average, about proportional to their enrollment in the schools. However, White students tend to have higher participation rates in low- and very-low-SES schools than in very-high-SES schools.

- It was found that AP class size in higher-SES schools tended to be greater than class size in lower-SES schools. This suggests greater demand on the part of students in higher-SES schools for AP classes, perhaps stemming from greater awareness of the benefits of the AP program (teachers in higher-SES schools more often said that "all" parents were aware of the benefits of AP classes), and higher expectations (owing to better preparation) that the students' will be successful in the difficult AP courses.
- More than 40% of the teachers said district financial support for their AP classes was "minimal" or "none."
- A surprisingly high percentage of teachers—43%—indicated that they lacked some instructional materials necessary to adequately prepare students for the AP exam. Teachers in lower-SES

schools reported more frequently than teachers in higher-SES schools that they lacked necessary materials. It was found that Calculus students in low- and very-low-SES schools were significantly less likely to have their own graphing calculator. Also, Spanish teachers in lower-SES schools more frequently reported than their counterparts in higher-SES schools that they lacked the equipment they felt was necessary to thoroughly prepare their students for the AP Spanish exam.

- Teachers in very-low-SES schools indicated that there was little pressure on them to achieve high exam scores. Teachers in higher-SES schools were more likely to report "some" or "a lot of" pressure to achieve high scores.

Chapter 3 • Characteristics of High- and Low-Performing Classes

This chapter examines the student, teacher, and class characteristics that are associated with high and low performance on the AP exams.

The survey methodology used in this study has some strengths, but it has many weaknesses. The sample is fairly large (286 classes), and it is representative of a range of SES levels, school sizes, and AP exam results. However, the data are not precise measurements and there are many potential sources of error. As a consequence, the findings presented here are best viewed as modest hypotheses, serving as a basis for discussion and possibly future research.

The question addressed in this Chapter is: Controlling for the SES level of the school, what student, teacher, and class characteristics are associated with high and low performance on the AP exams? Thus, the comparisons will be between higher-SES schools that do poorly and higher-SES schools that do well; and between lower-SES schools that perform poorly and lower-SES schools that have high scores.

The findings include many exasperating inconsistencies—for example, one subgroup of low-performing schools may be high on a particular measure, while another low-performing subgroup is low on the same measure. It is important to take into account these inconsistencies when reaching conclusions. Consequently, in evaluating the association between characteristics and performance, multiple criteria will be applied. The following considerations will be addressed in identifying the most important factors related to achievement:

- Is the difference statistically significant?
- Is the difference large or small?
- When subgroups are disaggregated or aggregated, does the difference still exist?
- Is there consistency across SES groups? That is, is a factor that is associated with performance in higher-SES schools also associated with performance in lower-SES schools?
- Is the difference found only in particular AP subjects, or is it found for all subjects?
- Is the difference consistent with theories, research findings, and expert opinion on sources of variation in student achievement?

The framework of the analysis reflects the sampling identification of cells 1-24.

	Performance Level					
SES Level	Extremely Low	Very Low	Low	High	Very High	Extremely High
Very High	1	2	3	4	5	6
High	7	8	9	10	11	12
Low	13	14	15	16	17	18
Very Low	19	20	21	22	23	24

Comparisons are made between the following individual and groups of cells:

- Cell 1 versus Cell 6
- Cell 19 versus Cell 24
- Cells 1 & 2 versus Cells 3 & 4 versus Cells 5 & 6
- Cells 19 & 20 versus Cells 21 & 22 versus Cells 23 & 24
- Cells 1, 2, 7, 8 versus Cells 3, 4, 9, 10 versus 5, 6, 11, 12
- Cells 13, 14, 19, 20 versus Cells 15, 16, 21, 22 versus Cells 17, 18, 23, 24
- Cells 1-3 & 7-9 versus Cells 4-6 & 10-12
- Cells 13-15 & 19-21 versus Cells 16-18 & 22-24

Displays 3-1 to 3-8 show, for each of the eight comparisons, the differences that were found to be statistically significant ($p = < .05$).

Characteristics That Are Most Consistently Associated With Performance

The following factors were most consistently associated with class performance on the AP exam. It should be reiterated that the following conclusions are based on performance comparisons controlling for the SES level of the school.

Number of Times Met with Feeder School Teachers This Year. Teachers in higher-performing classes consistently indicate that they have met with teachers from their feeder schools more times during the year than teachers of lower-performing classes. This finding is observed for both higher- and lower-SES schools and is true for all subjects where statistically significant differences are found. In general, teachers in higher-performing schools are more likely to have met once with feeder school teachers while the teachers from lower-performing schools are more likely to have met zero times.

Are There Large Gaps in Student Preparation? One of the most consistent findings is that teachers in lower-performing schools are more likely than teachers in higher-performing schools to see "large gaps (in other words, consistent deficiencies)" in student preparation for the AP class. Insofar as preparation is the key to success in AP courses, the teachers are (not surprisingly) often accurate in their view of the preparation of their pupils. This finding suggests that elimination of the "consistent deficiencies" that pupils bring to the AP class would be a good first step toward raising performance on the AP exam.

Percentage of Students Very-Well-Prepared for the AP Course. Related to the previous item, teachers in higher-performing classes reported much higher percentages of their students were "very-well-prepared" to take the AP class than teachers in lower-performing classes. This finding was consistent even for individual AP subjects within SES groups.

Unqualified Students Not Admitted to the AP Class. Also strongly associated with high performance on the exam is the practice of not admitting students to the class who are not qualified. While 80% of all teachers said they did *not* deny admission to any students because they were unqualified, many more teachers in the high-performing classes than teachers in lower-performing classes indicated they did deny admission to unqualified students.

Principal's Attitude Toward AP Classes. In lower-SES schools, teachers of higher-performing classes more frequently reported than teachers in lower-performing classes that the principal "strongly supports" AP classes. The association is even more pronounced in the *very*-low-SES schools. This is particularly interesting in light of the overall response from 83% of the teachers that the principal strongly supports AP classes. In the higher-SES schools, there is no association between the teachers' views of the attitude of the principal and student performance on the exam.

Pressure To Achieve High AP Exam Scores. Teachers of lower-performing classes report significantly more often than teachers of higher-performing classes that there is "no pressure" from school administrators to achieve high marks on the AP exam. The teachers in higher-performing classes more often report "some pressure" or "a lot of pressure."

Years Teaching the AP Subject. Higher-performing classes have teachers with more years of experience teaching the AP subject than lower-performing classes. This is generally found for all subjects and for all subjects within SES groups.

Possession of a Doctorate. All statistically significant differences are in the direction linking possession of a doctorate by the teacher with higher student performance. However, this association is limited to the higher SES schools only—there was only one teacher with a doctorate in the lower SES schools.

Graphing Calculators in Calculus Classes. A higher percentage of students in lower-performing Calculus classes than in higher-performing calculus do not have their "own" graphing calculator. In higher-SES schools, 9.5% of the students in lower-performing classes did not have a graphing calculator, while only 3.3% of the students in higher-performing classes lacked the calculator. In lower-SES schools, 48% of the students in lower-performing classes lacked the calculator, while 23% of students in higher-performing classes lacked the calculator.

Characteristics That Are Inconsistently Associated With Performance

- **Do You Possess a Masters degree?** In two comparisons, the lower-performing classes have significantly more teachers with a Masters degree, and in one comparison the higher-performing classes have more teachers who hold a Masters degree. The association with performance varies across AP subjects.
- **Have You Ever Attended an AP Summer Institute?** There is no consistent association between this variable and performance on the AP exam.
- **Mean Number of Summer Institutes Attended.** Overall an inconsistent factor. However, among the lower-SES schools, more summer institutes is somewhat associated with higher student performance—see Display 3-6.
- **Have You Ever Attended an AP Workshop?** Tendency to be negatively associated with student performance—that is, "YES" answer is more frequent in lower performing classes. However, varies by AP subject.
- **Mean Number of AP Workshops Attended.** Differences between high- and low-performing classes in attendance at AP workshops varies by AP subject and SES of schools. For example, in low-SES schools, teachers in high performing U. S. History and Calculus classes have attended more workshops than teachers of these subjects in low-performing classes (no significant differences in other subjects).
- **Teacher's Perception of the Adequacy of Efforts to Help Feeder Schools Prepare Students for Success in AP Courses.** In the very-low-SES schools, teachers in *higher-performing* classes are somewhat more likely than teachers in lower-performing classes to indicate that "much more effort" is needed in working with feeder schools. In contrast, in the higher-SES schools, teachers in the l*ower-performing schools* more often see the need for "much more effort." However, teachers in lower-performing classes in very-low-SES schools are still more likely to see the need for "much more effort" than teachers in lower-performing higher-SES schools.
- **Qualified Students Not Admitted Because the Class Full** Very few teachers (less than 10% overall) reported that any qualified students had to be denied admission because the AP class was full. However, nearly 50% of teachers in the extremely-

high-performing classes in very-low-SES schools said that they had to deny admission because of class-size limitations (primarily in English Literature) —this contrasts with only 9% of the teachers in the extremely-low-performing classes in the same SES category having to close the door on qualified students.

- **Is a Certain Grade in a Prerequisite Course Required for Admission to the AP class?** While earning a certain letter grade in a prerequisite course is often required for admission, the requirement does not appear consistently related to class performance.
- **Is a Teacher Recommendation Required for Admission to the AP Class?** In lower-SES schools, higher-performing classes are more likely to require a teacher recommendation for admission than lower-performing classes. However, there is no association in the higher-SES schools.
- **Is a Certain Exam Score Required for Admission to the AP Class?** There is no consistent association between this variable and performance on the AP exam.
- **Is Successful Completion of a Summer/Intercession Project Required for Admission to the AP Class.** In the higher-SES schools, teachers in higher-performing classes are more likely to require a summer project than teachers in lower-performing classes. In contrast, in the lower-SES schools, teachers in lower-performing classes more often require such a project. But, for both SES levels, the majority of teachers do not have such a requirement.
- **Teacher's View of How Important it is that Students Take the AP Exam.** In the higher-SES schools, teachers in higher-performing classes are more likely to think that taking the AP exam is "very important" than teachers in lower-performing classes. There is no association with performance in the lower-SES schools.
- **Are Students Required to Take the AP Exam?** Requiring that all students take the exam results in lower average scores when students who think (correctly) that they will do poorly are not allowed to opt out. We might expect to find higher-performing classes to be less likely to impose an exam requirement. However, the data are inconsistent on this policy, in some comparisons high-performing schools are more likely to have an exam requirement, and in others lower-performing schools are more likely to have the requirement.
- **Should Exam Be Required If There was No Cost?** There is no consistent association between this variable and performance on the AP exam.
- **How Adequate is District Financial Support?** Teachers in higher-performing classes tend to complain more than teachers in lower-performing classes about the district's financial support of the AP program. However, the differences are not large.
- **Faculty Attitude Toward AP Classes.** Surprisingly, teachers in lower-performing classes report more often than teachers in higher-performing classes that most of the teachers in the school "strongly support" the AP program.
- **Parents Knowledge of the Benefits of AP Classes.** Another surprising finding is that teachers in lower-performing classes are more likely than teachers in higher-performing classes to respond that "all parents are knowledgeable" about the benefits of AP classes.
- **Is Vertical Teaming Part of your AP Program?** There is no consistent association between this variable and performance on the AP exam.
- **Do you Lack Instructional Materials Necessary for Students to do Well on the AP exam?** There is no consistent association between this variable and performance on the AP exam.

- **Do you have a Discretionary Class Budget?** Teachers in lower-performing classes in very-high-SES schools much more frequently than those in higher-performing classes say that they have a discretionary AP class budget.
- **Do You Assign Group Projects Requiring Students to Work Together Outside of Class Time**. The assignment of group projects outside of class time appears to be somewhat a characteristic of higher-performing classes in very-high-SES schools and of lower-performing classes in very-low-SES schools.
- **Do You Provide Weekend Group Sessions.** There is no consistent association between this variable and performance on the AP exam.
- **Do You Provide After-school Group Sessions.** There is no consistent association between this variable and performance on the AP exam.
- **Do You Provide Individual Tutoring?** There is no consistent association but teachers in lower-performing classes more often say they provide individual tutoring than teachers in higher-performing classes.
- **Do You Provide College Counseling?** Teachers in lower-performing classes are much more likely to report that they provide their students with college counseling than teachers in higher-performing classes.
- **Effectiveness of Counselors in Helping Low-income Students Go to College.** Teachers in lower-performing classes are more likely to report that the counselors are "very effective" than teachers in higher-performing classes
- **Mean Years Teaching.** There is no consistent association between this variable and performance on the AP exam.
- **Class Size.** In the lower-SES schools, higher-performing classes have significantly larger enrollments than lower-performing classes. This may reflect greater demand for more successful teachers. In the higher-SES schools, there is no significant difference in the class size of higher- and lower-performing classes.
- **Hours of Class Time Spent Practicing AP exams.** Teachers in lower-performing classes report spending more class-time practicing AP exams than do teachers in higher-performing classes. There is a negative correlation between practice hours and exam performance in all subjects except chemistry.
- **Percent of Time in Lecture/Class Discussion.** Teachers of higher-performing English Literature and U. S. History classes report spending more time in lecture/class discussion (as opposed to small group and individual work) than teachers of lower-performing classes. In Calculus, Chemistry, and Spanish, the correlations between percent of time spent in a particular instructional mode and exam performance are weak.
- **Teacher Gender.** Higher-performing classes are more likely to have a female teacher than a male teacher. This is found within SES groups and within AP subjects.

In addition, as shown in Table 3-1, the lower the enrollment of female students in a class with a female teacher, generally the higher the performance of the class.

Table 3-1

Percentage of Class Enrollment Female by Performance Group (Classes with a Female Teacher)

		Percent of Students Female		
	N	Subset for alpha = .05		
2000 AP Exam Performance Group		1	2	3
Extremely High	109	44.5		
Very High	132	48.6		
Low	159		59.5	
Very Low	64		60.9	
High	47		61.3	
Extremely Low	102			72.2

- **Gender of Students in Class.** Higher-performing classes tend to have a lower percentage of female students. Higher performing classes tend to be about 50:50 in terms of gender. Lower-performing classes have 55% to 67% female students.
- **Percentage of Students to Take the Exam.** Teachers of higher-performing classes report that a slightly higher percentage of students in the class will take the exam than reported by teachers of lower-performing classes.
- **Are Chemistry Lab Facilities Adequate.** There was no statistically significant difference between higher- and lower-performing classes, but the data are clearly in the direction of teachers of lower-performing classes more often reporting inadequate lab facilities than teachers in higher-performing classes.

Characteristics That Show No Association With Performance

- Did you teach the AP subject in the prior school year? (Yes/No)
- Do you use a textbook? (Yes/No)
- Do your students practice AP exams in class? (Yes/No)

Conclusions

Using a very conservative approach, and applying multiple criteria, this study has identified nine factors (identified on pages 35-36) that appear to be strongly associated with class performance on the AP exam.

This study has confirmed the oft made observation that student preparation is crucial for success in AP classes. Schools and classes that are doing poorly on the AP exams should look first to what is going on in the preparatory courses, rather than looking first at the AP class itself. It is most likely that inadequate grounding is making the task extremely difficult, if not impossible, for the AP teacher, given the pace and scope of the AP curriculum. The articulation and coordination of concepts, skills, and knowledge needs to extend back to the middle schools and even below. AP teachers of high-performing classes often recognize this need as evidenced by the higher level of interaction with the feeder schools they appear to have. The "large gaps" and "consistent deficiencies" that many teachers report must be identified closed.

Regarding teacher preparation, years of experience teaching the AP subject is most important. Experience is more important than attending AP Summer Institutes or Workshops, and more important than having a Masters degree. The power of this variable is true for all SES groups and generally true for all five subjects. If, in fact, many AP teachers will soon be retiring (as is frequently mentioned at AP conferences) it would not be surprising to see exam scores decline. Since experience is so important, it might be wise to encourage young teachers to become AP teachers so that once they have acquired the experience they will not be on the brink of retirement.

AP teachers need support from their principals and districts. Support from the principal should include encouragement of (and some "pressure" on) the teacher to achieve high exam results. If it doesn't matter how the students perform, they will probably not do well and maybe not even take the exam. Too many teachers report "minimal" or "no" financial support from their district. Chemistry labs need to be fully equipped and all Calculus students need a graphing calculator. Surprisingly few teachers have discretionary budgets for supplies and materials for their AP classes. It is no wonder that so many teachers indicate they lack instructional materials that are essential to prepare students to do well on the AP exam.

General Observations

One of the goals of this study was to develop a better understanding of what characterized instruction in AP classes, and what issues were most salient for AP teachers. To that end, the survey included three open-ended questions regarding the nature of instruction in AP classes compared to non-AP classes, "front burner" issues regarding APs and problems associated with the program at the school and in the district. It also provided an opportunity for respondents to comment in general.

The majority of respondents answered the open-ended questions, but the extent varied greatly. Some teachers wrote informative notes along the margin of the entire survey, amplifying their answers. Other teachers (notably US History and English Literature) wrote extensively, often using the back sides of the survey. Several teachers expressed appreciation for the attention directed at AP instruction. One teacher included a copy of her letter to the College Board regarding the test and time for instruction, while another included a clipping from the local newspaper about the positive correlation between the difficulty of high school courses and college completion.

Front Burner Issues

For all subjects, responses to this question fell into three categories: (1) issues relating to test-taking, course enrollment and the additional grade point, (2) issues related to student preparation and student engagement (or lack of it), and (3) institutional factors including fiscal support, scheduling, recruitment/preparation of students.

Test Taking, Course Enrollment, Credit

- AP teachers across subjects expressed a concern that students took too many AP courses at one time and often were less interested in engaging in the intellectual work of the course than in earning an extra grade point average.
- A number of teachers reported that their school was transitioning from no requirement to take the test to a quid-pro-quo system of assigning the extra grade point to those who took the exam
- Teachers with larger class sizes (35 or more) or teaching multiple sections (in larger schools) remarked on the need to reduce class size or restrict enrollment in such a way as to "track" AP classes.
- Several teachers (of small classes) remarked on the need to separate AP numbers for classes so that regular classes (in the same subject) would not become "bloated."
- Although many teachers did not feel students should be obligated to take the test, this varied somewhat when considering the cost of the test. One teacher remarked on the "roadblock" for fee reduction at her school requiring students to "bring a copy of their parent's tax return" to gain a fee waiver.

Student Preparation and Engagement

- Many teachers used expressions like "Kids don't apply themselves" or "aren't serious" about the AP courses.
- There were multiple references to the lack of preparation of AP students. These ranged from concerns that parent pressure on schools and students was resulting in students enrolling in courses for which they were not intellectually prepared to expressions of specific deficits on the part of students in reading and writing (History and English) or in analysis (Calculus and Chemistry) necessary to complete the AP curriculum.

Institutional Factors

- AP teachers of all subjects commented on the timing of the AP exam. They expressed concern that students on the West Coast take the exam earlier in their school year, as much as six weeks prior to the end of instruction. This forces AP teachers to compress instruction even more than is considered characteristic of the AP course.
- In schools where there is a block schedule, teachers discussed the difficulty of adequate preparation. Either students finish the course 5 months before the exam or they are not able to complete the coursework before the exam. Block schedule also requires teachers to schedule additional coaching time without compensation. Some analysis of Block schedule suggests that compacting curriculum of prerequisite courses may result in students less prepared for AP even if they have enrolled in the prerequisites.
- Quite a few teachers commented on the workload of AP and the lack of financial compensation for teaching AP. Several mentioned their decision to leave the AP course and/or the school because, in part, of the lack of support (fiscal) for their extra work.
- Class size was a concern to teachers, particularly in medium and large size schools. AP teachers expressed concern that large class sizes (in part due to the presence of unqualified students) made instruction difficult, created a much larger work load (English Literature and US History), and led to imbalances in classes in the department.
- A few teachers commented on issues of equity. There were some references to the need to better prepare minority students, to recruit more minority students and women (Calculus) to take AP courses, but overall, these were exceptions.

Problems with AP Program

Many of the responses to this prompt echoed the points above. AP teachers tended to see the problems as ones of student engagement, institutional support and student preparation for the rigors of AP.

- A number of teachers were concerned that students could not maintain interest in their course because they were taking 5 or 6 AP courses at the same time.
- Few teachers expressed concern that the school's philosophy against AP tended to be reflected in the lack of support for the program. However some responses indicated tensions within the school between those opposed to the AP program, those wanting AP courses (including parents and some teachers), and a divided administration.
- Teachers (Calculus) commented on the lack of qualified teachers to teach the AP course and the decline of enrollment of women and minorities in their classes.
- Teachers across subjects consistently expressed concern that there was little alignment within their discipline so that students might come to their AP classes with a common preparation.
- Spanish teachers routinely commented on the difficulty of preparing students with inadequate materials and in "blended" classes (Spanish 4 and 5 including AP)

Conclusions

The responses to the open-ended questions and the additional commentary included in the surveys provided a very data rich source, some of which is still under analysis. AP teachers expressed their perceptions of the issues and problems associated with their program in similar ways, regardless of subject. Their responses reflect several tensions endemic to the AP program in California public schools. The most salient of these are identified below.

- Increased expectations (and in some cases, decreased prerequisites) for AP enrollment on the part of parents and administrators have led, in

some cases to the sense that more "unqualified or underprepared" students are enrolled in AP courses.

- The competition for college admission (based on strong GPA) may have led to student enrollment in multiple AP courses but less robust engagement in course content, and possibly less actual AP test-taking.
- AP teaching and test preparation are time consuming and require a commitment beyond that of regular courses, but extra time does not necessarily translate into increased compensation or smaller course load or class size.
- High school organizational structures, support in the way of materials, time and compensation, and the California school calendar seem to hinder AP teachers' ability to prepare students to take the examinations.

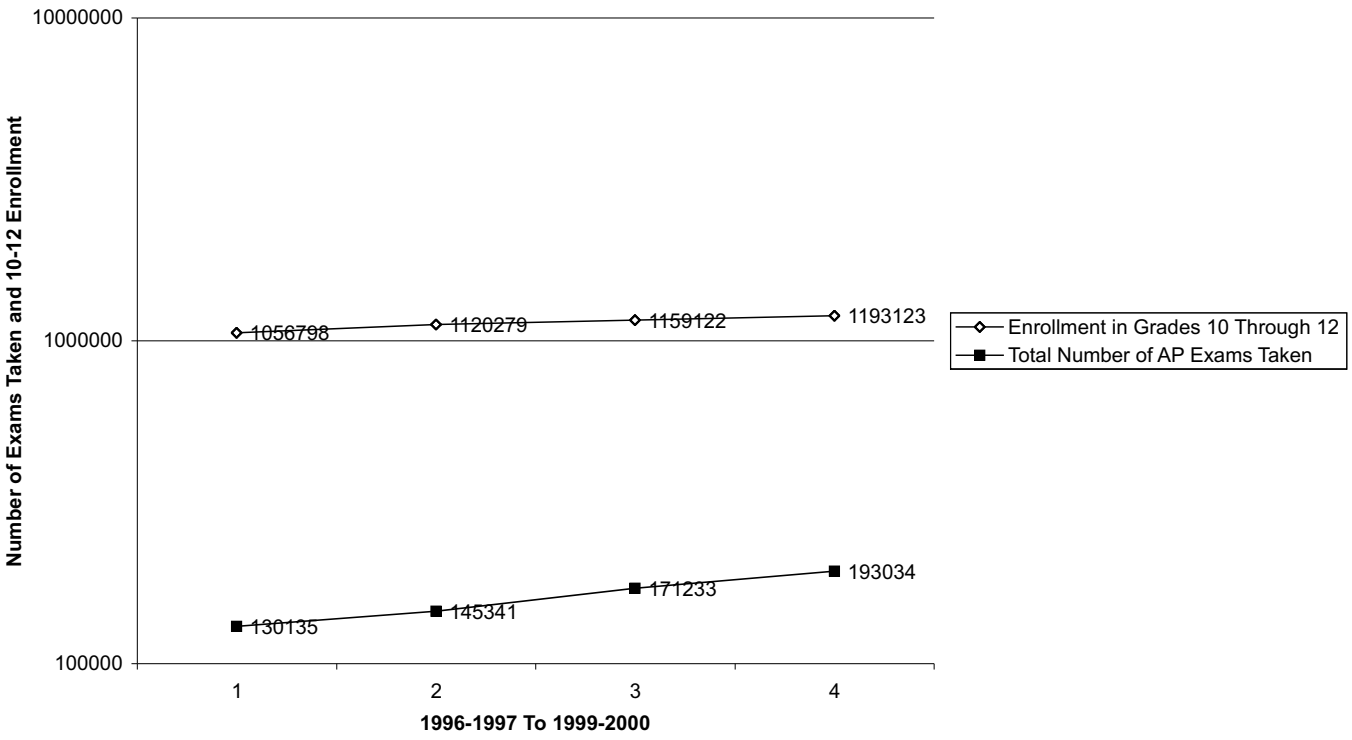
Ultimately, AP teachers' responses to the open-ended questions reflect their sense that the success of their program is linked with the preparation their students receive in their foundation courses, and the commitment of their students to achieve.

Appendix A

Displays for Chapters 1, 2 and 3

Display 1-1

AP Exams Taken and Enrollment in Grades 10 To 12 in California Public Schools, 1996-97 To 1999-2000



Display 1-4

Number of Exams Taken and Mean Exam Scores by Subject
1996-1997 To 1999-2000

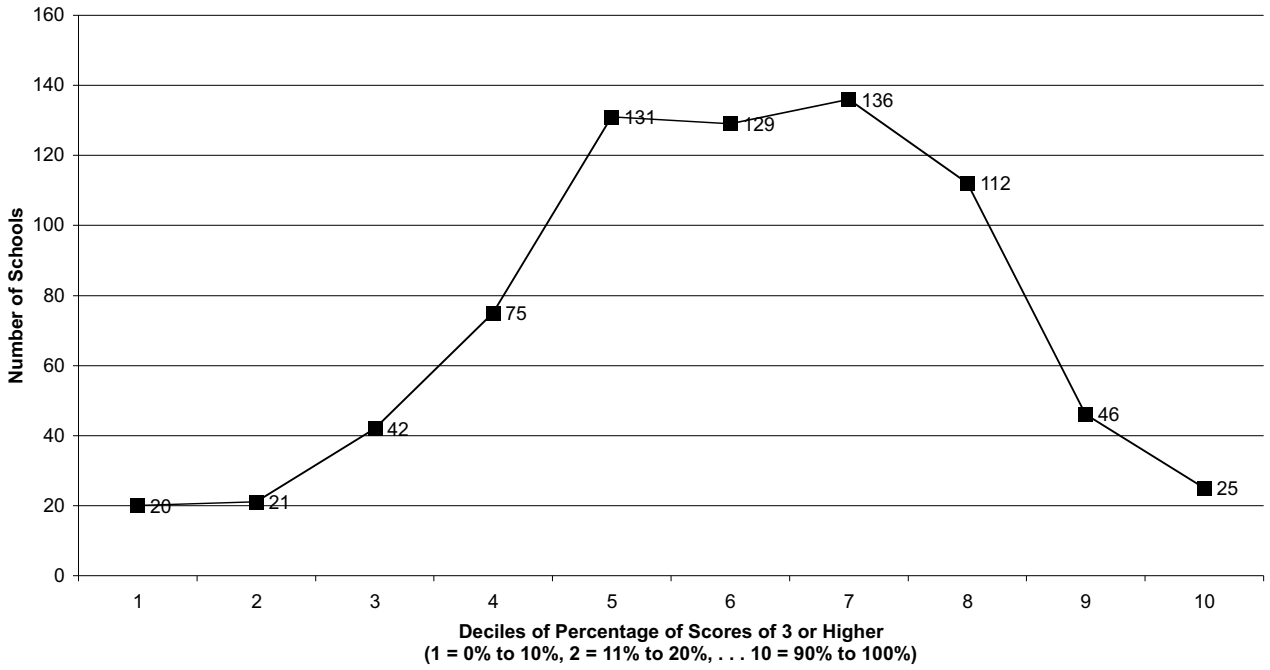
AP Subject	Number of Exams Taken			Mean Exam Score		
	1996-1997	1999-2000	Percentage Change	1996-1997	1999-2000	Percentage Change
U. S. History	20882	26785	28.3%	2.78	2.68	-3.6%
English Literature & Composition	18779	23685	26.1%	2.98	2.93	-1.7%
Spanish Language	14563	20559	41.2%	3.91	3.93	0.5%
Calculus AB	13258	17233	30.0%	2.92	2.99	2.4%
English Language & Composition	7994	15573	94.8%	2.90	2.81	-3.1%
U. S. Government & Politics	9017	13579	50.6%	2.82	2.64	-6.4%
Biology	9338	12143	30.0%	3.20	3.09	-3.4%
European History	5154	8682	68.5%	2.98	2.81	-5.7%
Chemistry	4925	6895	40.0%	2.78	2.77	-0.4%
Statistics	1475	6095	313.2%	2.64	2.63	-0.4%
Physcis B	3092	5133	66.0%	2.57	2.54	-1.2%
Calculus BC	2826	4652	64.6%	3.52	3.55	0.9%
Macroeconomics	2711	4380	61.6%	2.99	2.86	-4.3%
Microeconomics	2511	3776	50.4%	2.81	2.71	-3.6%
Sapnish Literature	2175	3735	71.7%	3.05	2.96	-3.0%
Psychology	1992	3375	69.4%	3.16	3.11	-1.6%
Environmental Science*	663	2439	267.9%	2.73	2.69	-1.5%
Art History	1368	2298	68.0%	3.08	2.98	-3.2%
Phsycis C: Mechanics	1730	2160	24.9%	2.98	3.09	3.7%
Computer Science A	826	1933	134.0%	2.67	2.90	8.6%
French Language	1511	1862	23.2%	2.67	2.46	-7.9%
Comparative Government & Politics	892	1340	50.2%	2.64	2.60	-1.5%
Art Studio General	798	1097	37.5%	3.22	2.93	-9.0%
Computer Science AB	461	876	90.0%	3.46	3.42	-1.2%
Physics C: Electricity	570	795	39.5%	3.09	3.06	-1.0%
Music Theory	382	589	54.2%	3.19	3.29	3.1%
Art Studio/Drawing	287	562	95.8%	3.14	3.11	-1.0%
German Language	358	421	17.6%	3.08	3.13	1.6%
Latin: Vergil	137	217	58.4%	3.36	2.97	-11.6%
French Literature	64	109	70.3%	2.91	3.44	18.2%
Latin: Literature	59	12	-79.7%	1.81	2.92	61.3%

*The first Environmental Science Exam was given in 1998

Display 1-5

Number of California Public Schools by Percentage of AP Exam Scores of 3 or HIgher

May, 2000



Display 1-6

Number of Schools by Percentage of School Enrollment Eligible for Free/Reduced Price Meals and Percentage of Scores of 3 or Higher on All AP exams 1997-1998

Percentage of AP Exam Scores 3 or Higher	Percentage of School Enrollment Eligible for Free/Reduced Meals				
	0% to 10%	10+% to 20%	20+% to 30%	30+% to 50%	50+% to 100%
0% to 35%	6	14	13	40	73
35+% to 50%	7	25	34	55	34
50+% to 63%	21	44	30	38	20
63+% to 73.7%	42	43	36	24	9
73.7+% to 100%	70	42	15	15	6

Display 1-7

Number of Schools by School Size and Percentage of Scores of 3 or Higher on All AP Exams 1997-1998

Percentage of AP Exam Scores 3 or Higher	School Enrollment					
	0 to 500	501 to 1000	1001 to 1500	1501 to 2000	2001 to 3000	3001 and more
0% to 35%	15	22	26	27	37	19
35+% to 50%	11	18	20	38	57	11
50+% to 63%	5	11	25	39	60	13
63+% to 73.7%	6	14	24	52	48	11
73.7+% to 100%	13	21	30	38	43	4

Display 2-1

Gender of AP Teachers by AP Subject and SES Group

AP subject	SES Group	% within SES Groups Gender Female	Male	Total
English Literature & Composition**	High SES	59.3	40.7	100.0
	Low SES	72.8	27.2	100.0
	Total*	65.6	34.4	100.0
U. S. History	High SES	43.6	56.4	100.0
	Low SES	40.9	59.1	100.0
	Total*	42.2	57.8	100.0
Calculus**	High SES	29.8	70.2	100.0
	Low SES	44.2	55.8	100.0
	Total*	36.1	63.9	100.0
Chemistry	High SES	65.6	34.4	100.0
	Low SES	55.6	44.4	100.0
	Total*	62.0	38.0	100.0
Spanish	High SES	61.1	38.9	100.0
	Low SES	56.5	43.5	100.0
	Total*	58.9	41.1	100.0
Total All Subjects		52.1	47.9	100.0

*The gender differences in the totals within all AP subjects are significant at p = < .005.
**In English Literature and Calculus, the gender differences between High and Low SES are significant at p = <.001

Display 2-2

Ethnicity of AP teachers by SES Group

	Ethnicity							
	African-American Percent Within		Asian-American Percent Within		Hispanic Percent Within		White Percent Within	
SES Group	Afro-Am	SES Group	Asian	SES Group	Hispanic	SES Group	White	SES Group
Very Low	48.8	4.9	20.4	2.6	30.2	21.8	20.2	70.7
Low	51.2	4.6	75.9	8.6	37.7	24.4	19.8	62.4
High	0.0	0.0	1.9	0.2	23.7	15.9	25.8	83.9
Very High	0.0	0.0	1.9	0.2	8.4	4.8	34.2	95.0
Total	100.0		100.0		100.0		100.0	

Pearson Chi-Square p = < .0005 for both the distribution within ethnicities across SES groups and the distribution within SES groups across ethnicities.

Display 2-3

Mean Years Teaching and Mean Years Teaching the AP Subject
By School Size and SES Group

School Size	Mean Years Teaching*	Mean Years Teaching the AP Subject**
0 to 800	12.4	5.4
801 to 1300	15.3	5.6
1301 to 1800	21.6	8.1
1801 to 2400	22.4	9.8
2401 to 2999	20.0	8.9
3000 or more	14.9	6.2
	19.7	8.2

SES Group	Mean Years Teaching	Mean Years Teaching the AP Subject
Very Low	15.3*	6.3*
Low	20.2*	7.8*
High	20.2+	7.8+
Very High	22.3+	10.6+
Total	19.7	8.2

*,+ p = < .05

*There are two homogeneous subsets: (1) 0 to 800, 801 to 1300, and 3000 or more; and (2) the other three size groups. P = < .05

**There are three homogenous subsets (1) 0 to 800, 801 to 1300, and 3000 or more; (2) 1301 to 1800 and 3000 or more; and (3) 1301 to 1800, 1801 to 2400, and and 2401 to 3000. P = < .05

Display 2-4

Percentage of Teachers Who Hold a Masters Degree by School Size

School Enrollment Groups	Statistic	Do you have masters degree? YES	NO	Total
0 to 800	Count	29	47	76
	Expected Count	46	30	76
	% within School Enrollment Groups	38.2	61.8	100
	Adjusted Residual	-4.0	4.0	
801 to 1300	Count	82	122	204
	Expected Count	123	81	204
	% within School Enrollment Groups	40.2	59.8	100
	Adjusted Residual	-6.1	6.1	
1301 to 1800	Count	240	137	377
	Expected Count	227	150	377
	% within School Enrollment Groups	63.7	36.3	100
	Adjusted Residual	1.6	-1.6	
1801 to 2400	Count	457	171	628
	Expected Count	377	251	628
	% within School Enrollment Groups	72.8	27.2	100
	Adjusted Residual	7.9	-7.9	
2401 to 2999	Count	290	126	416
	Expected Count	250	166	416
	% within School Enrollment Groups	69.7	30.3	100
	Adjusted Residual	4.5	-4.5	
3000 and more	Count	66	170	236
	Expected Count	142	94	236
	% within School Enrollment Groups	28.0	72.0	100
	Adjusted Residual	-10.8	10.8	
Total		60.1	39.9	100.0

Pearson Chi-Square 210.6 p = < .0005

Display 2-5

AP subject by Do you have masters degree?

	Do you have masters degree? YES	NO
English Literature & Composition		
% within AP subject	72.6	27.4
Adjusted Residual	6.8	-6.8
U. S. History		
% within AP subject	52.1	47.9
Adjusted Residual	-3.9	3.9
Calculus		
% within AP subject	65.5	34.5
Adjusted Residual	2.6	-2.6
Chemistry		
% within AP subject	44.0	56.0
Adjusted Residual	-4.2	4.2
Spanish		
% within AP subject	52.9	47.1
Adjusted Residual	-3.3	3.3
Total		
% within AP subject	60.0	40.0

Pearson Chi-Square = 75.2 p = < .0005

Display 2-6

Percentage of Teachers Who Hold a Masters Degree
by AP Subject and SES Group

Subject		Statistic	Do you have masters degree? YES	NO	Total
English Literature & Composition	High SES	% within SES Group	79.9	20.1	100.0
		Adjusted Residual	4.0	-4.0	
	Low SES	% within SES Group	64.0	36.0	100.0
		Adjusted Residual	-4.0	4.0	
		Total	72.5	27.5	100.0
U. S. History	High SES	% within SES Group	54.8	45.2	100.0
		Adjusted Residual	1.1	-1.1	
	Low SES	% within SES Group	49.6	50.4	100.0
		Adjusted Residual	-1.1	1.1	
		Total	52.1	47.9	100.0
Calculus	High SES	% within SES Group	73.6	26.4	100.0
		Adjusted Residual	4.0	-4.0	
	Low SES	% within SES Group	55.3	44.7	100.0
		Adjusted Residual	-4.0	4.0	
		Total	65.5	34.5	100.0
Chemistry	High SES	% within SES Group	39.6	60.4	100.0
		Adjusted Residual	-1.5	1.5	
	Low SES	% within SES Group	51.9	48.1	100.0
		Adjusted Residual	1.5	-1.5	
		Total	44.0	56.0	100.0
Spanish	High SES	% within SES Group	83.3	16.7	100.0
		Adjusted Residual	13.0	-13.0	
	Low SES	% within SES Group	19.2	80.8	100.0
		Adjusted Residual	-13.0	13.0	
		Total	53.1	46.9	100.0

The distributions are statisically significant (p = < .0005) for only Spanish, Calculus, and English Literature

Display 2-7

Number of AP Summer Institutes and AP Workshops Attended by SES Group and School Size

Number of Summer Institutes Attended in AP Subject

SES Groups	Homogenous Subsets for alpha = .05		
	1	2	3
High	0.51		
Very High	0.59	0.59	
Very Low		0.74	0.74
Low			0.92

Number of Workshops Attended in AP Subject

SES Groups	Homogenous Subsets for alpha = .05		
	1	2	3
Very Low	1.94		
Low		2.48	
High		2.80	
Very High			3.86

Number of Summer Institutes Attended in AP Subject

School Size	Homogenous Subsets for alpha = .05	
	1	2
0 to 800	0.28	
801 to 1300		0.61
1301 to 1800		0.72
1801 to 2400		0.75
2401 to 2999		0.80
3000 and more		0.84

Number of Workshops Attended in AP Subject

School Size	Homogenous Subsets for alpha = .05		
	1	2	3
0 to 800	1.41		
801 to 1300	1.92	1.92	
3000 and more	2.06	2.06	
1301 to 1800		2.67	2.67
1801 to 2400			3.20
2401 to 2999			3.52

Display 2-8

Mean Number of Meetings with Feeder-School Teachers to Discuss Preparation for AP Courses

SES Groups	Homogenous Subsets for alpha = .05	
	1	2
Very Low	0.24	
Low		0.58
Very High		0.62
High		0.70

F = 8.58 p = < .0005

Display 2-9

Perception of Adequacy of Efforts to Help Feeder Schools Prepare Students for AP courses

		Percentage Responding			
SES Group	Statistic	Effort is Adequate	More Effort Needed	Much More Effort Needed	Total
Very High	% within SES Group	47.6	32.7	19.7	100.0
	Adjusted Residual	15.0	0.2	-13.1	
High	% within SES Group	27.0	40.7	32.3	100.0
	Adjusted Residual	1.9	4.5	-5.9	
Low	% within SES Group	10.3	30.2	59.5	100.0
	Adjusted Residual	-7.6	-1.1	7.6	
Very Low	% within SES Group	4.8	24.6	70.6	100.0
	Adjusted Residual	-10.4	-3.8	12.5	
Total		23.9	32.3	43.8	100.0

Pearson Chi-Square = 413.4 p = < .0005

Display 2-10

Awareness and Implementation of Vertical Teaming by AP Subject

		Have you heard of Vertical Teaming?		
AP Subject		YES	NO	Total
English Literature & Composition	% within AP subject	87.5	12.5	100.0
	Adjusted Residual	16.5	-16.5	
U. S. History	% within AP subject	44.3	55.7	100.0
	Adjusted Residual	-5.9	5.9	
Calculus	% within AP subject	58.7	41.3	100.0
	Adjusted Residual	1.0	-1.0	
Chemistry	% within AP subject	25.2	74.8	100.0
	Adjusted Residual	-8.1	8.1	
Spanish	% within AP subject	39.7	60.3	100.0
	Adjusted Residual	-7.6	7.6	
Total		56.5	43.5	100.0

Pearson Chi-Square = 334.1 p = < .0005

		If you have heard of Vertical Teaming, Is Vertical Teaming part of your program?		
AP Subject		YES	NO	Total
English Literature & Composition	% within AP subject	23.2	76.8	100.0
	Adjusted Residual	2.0	-2.0	
U. S. History	% within AP subject	2.0	98.0	100.0
	Adjusted Residual	-7.0	7.0	
Calculus	% within AP subject	12.0	88.0	100.0
	Adjusted Residual	-3.7	3.7	
Chemistry	% within AP subject	21.1	78.9	100.0
	Adjusted Residual	0.1	-0.1	
Spanish	% within AP subject	48.1	51.9	100.0
	Adjusted Residual	9.2	-9.2	
Total		20.3	79.7	100.0

Pearson Chi-Square = 126.3 p = < .0005

Display 2-11

Teacher Perception of Percentage of Students Well-Prepared to Take the AP Class by SES Group and AP Subject

SES Group	Percentage Well-Prepared to Take the AP Course	95% Confidence Interval Lower Bound	Upper Bound
Very High	64.5	62.0	66.9
High	61.5	58.6	64.4
Low	53.8	51.0	56.5
Very Low	42.0	38.8	45.1
Total	56.1	54.7	57.6

(I) SES Groups	(J) SES Groups	Mean Difference (I-J)*	95% Confidence Interval Lower Bound	Upper Bound
Very High	High	2.96	-2.05	7.99
	Low	10.71*	5.68	15.75
	Very Low	22.50*	17.33	27.68
High	Very High	-2.97	-7.99	2.05
	Low	7.74*	2.54	12.95
	Very Low	19.5*	14.20	24.88
Low	Very High	-10.71*	-15.75	-5.68
	High	-7.74*	-12.95	-2.54
	Very Low	11.79*	6.44	17.15
Very Low	Very High	-22.50*	-27.68	-17.33
	High	-19.53*	-24.88	-14.20
	Low	-11.79*	-17.15	-6.44

*An asterisk indicates the mean difference is significant at the .05 level (takes into account multiple comparisons).

Percent well prepared for AP class by AP Subject

AP subject	Homogeneous Subsets for alpha = .05 1	2	3
U. S. History	45.3		
English Literature & Composition		55.9	
Chemistry		56.1	
Calculus		59.8	59.8
Spanish			64.2

Display 2-12

Percentage of AP Teachers Indicating There Are Large Gaps in Student Preparation
by SES Group and AP Subject

SES Groups	Statistic	Are there large gaps in preparation of students YES	NO	Total
Very High	% within SES Group	41.1	58.9	100.0
	Adjusted Residual	-9.3	9.3	
High	% within SES Group	36.7	63.3	100.0
	Adjusted Residual	-10.4	10.4	
Low	% within SES Group	71.5	28.5	100.0
	Adjusted Residual	6.9	-6.9	
Very Low	% within SES Group	86.3	13.7	100.0
	Adjusted Residual	13.5	-13.5	
Total		57.9	42.1	100.0

Pearson Chi-Square = 320.4 p = < .0005

AP Subject		Are there large gaps in preparation of students YES	NO	Total
English Literature & Composition	% within AP subject	59.3	40.7	100.0
	Adjusted Residual	0.8	-0.8	
U. S. History	% within AP subject	74.4	25.6	100.0
	Adjusted Residual	7.8	-7.8	
Calculus	% within AP subject	42.1	57.9	100.0
	Adjusted Residual	-7.5	7.5	
Chemistry	% within AP subject	34.1	65.9	100.0
	Adjusted Residual	-5.7	5.7	
Spanish	% within AP subject	63.4	36.6	100.0
	Adjusted Residual	2.5	-2.5	
Total		57.8	42.2	100.0

Pearson Chi-Square = 126.0 p = < .0005

Display 2-13

Percentage of AP Teachers Who Said That Students Were Not Admitted Because They Were Not Qualified by AP Subject and SES Group

AP Subject	Percentage of Teachers YES
English Literature & Composition	25.7
U. S. History	20.0
Calculus	7.9
Chemistry	31.3
Spanish	18.1
	19.3

Pearson Chi-Square = 62.1 p = < .0005

		Were any students not admitted because not qualified?		
SES Groups	Statistic	YES	NO	Total
Very High	% within SES Groups	28.6	71.4	100.0
	Adjusted Residual	6.4	-6.4	
High	% within SES Groups	5.6	94.4	100.0
	Adjusted Residual	-8.7	8.7	
Low	% within SES Groups	20.6	79.4	100.0
	Adjusted Residual	0.8	-0.8	
Very Low	% within SES Groups	21.2	78.8	100.0
	Adjusted Residual	1.1	-1.1	
Total		19.3	80.7	100.0

Pearson Chi-Square = 87.8 p = < .0005

Dsiplay 2-14

Ratio of Percentage of Enrollment in AP Classes to Precentage of Enroolment in the School

Ethnicity	Mean*	Mean Excluding Spanish Language Classes**	1999-2000 Exams Taken Ethnic Ratio***
Asian	2.52	2.89	2.78
Filipino	2.18	2.46	na
Pacific Islander	1.53	1.90	na
American Indian	1.06	1.09	0.61
White	1.05	1.15	1.03
Hispanic	0.66	0.44	0.48
African American	0.41	0.45	0.31

*All differences are statistically significant at P = < .0005 except the differences between Pacfic Islanders and American Indians, American Indians and Whites, Asians and Filipinos, and Pacific Islanders and Whites.

**All differences are statistically significant at P = < .0005 except the differences between African Americans and Hispanics, American Indians and Pacific Islanders, American Indians and Whites, and Asians and Filipinos.

***See Chapter 1.

na = not available

Display 2-15

Ratio of Percentage of Ethnic Enrollment in AP Classes to Percentage of Ethnic Enrollment in the School by Ethnic Group and SES Group

Ethnic Group	SES Group	Mean	95% Confidence Interval for Mean Lower Bound	Upper Bound
African-American	Very High	0.62	0.47	0.77
	High	0.33	0.26	0.40
	Low	0.45	0.38	0.51
	Very Low	0.20	0.15	0.25
	Total	0.41	0.36	0.46
American Indian	Very High	1.94	1.45	2.42
	High	0.20	0.12	0.28
	Low	1.75	1.43	2.08
	Very Low	0.01	0.00	0.03
	Total	1.06	0.89	1.23
Asian	Very High	3.33	3.13	3.53
	High	1.95	1.70	2.20
	Low	2.65	2.10	3.19
	Very Low	1.92	1.72	2.11
	Total	2.52	2.35	2.68
Hispanic	Very High	0.66	0.59	0.73
	High	0.58	0.51	0.65
	Low	0.75	0.68	0.82
	Very Low	0.65	0.60	0.69
	Total	0.66	0.63	0.69
Filipino	Very High	2.31	1.84	2.78
	High	2.17	1.48	2.87
	Low	2.23	1.61	2.84
	Very Low	1.92	1.47	2.36
	Total	2.18	1.89	2.46
Pacific Islander	Very High	0.38	0.21	0.55
	High	0.74	0.53	0.95
	Low	3.15	2.33	3.97
	Very Low	2.18	1.25	3.10
	Total	1.53	1.24	1.82
White	Very High	0.84	0.81	0.86
	High	1.06	1.00	1.12
	Low	1.17	1.09	1.24
	Very Low	1.21	1.08	1.34
	Total	1.05	1.02	1.09

African American

	Subset for alpha = .05		
SES Groups	1	2	3
Very Low	0.20		
High	0.33	0.33	
Low		0.45	0.45
Very High			0.62

Filipino

	Subset for alpha = .05
SES Groups	1
Very Low	1.92
High	2.17
Low	2.23
Very High	2.31

American Indian

	Subset for alpha = .05	
SES Groups	1	2
Very Low	0.01	
High	0.20	
Low		1.75
Very High		1.94

Pacific Islander

	Subset for alpha = .05	
SES Groups	1	2
Very High	0.38	
High	0.74	
Very Low		2.18
Low		3.15

Asian

	Subset for alpha = .05		
SES Groups	1	2	3
Very Low	1.92		
High	1.95		
Low		2.65	
Very High			3.33

White

	Subset for alpha = .05		
SES Groups	1	2	3
Very High	0.84		
High		1.06	
Low		1.17	1.17
Very Low			1.21

Hispanic

	Subset for alpha = .05	
SES Groups	1	2
High	0.58	
Very Low	0.65	0.65
Very High	0.66	0.66
Low		0.75

Display 2-16

Ratio of Percentage of Ethnic Enrollment in AP classes to Percentage of Ethnic Enrollment in the School by Ethnicity and AP Subject

African Americans

	Subset for alpha = .05		
AP subject	1	2	3
Chemistry	0.20		
Spanish	0.27	0.27	
Calculus	0.42	0.42	0.42
English Literature & Composition		0.47	0.47
U. S. History			0.55

Pacific Islanders

	Subset for alpha = .05	
AP subject	1	2
Spanish	0.24	
Chemistry	0.65	
Calculus	0.68	
U. S. History		2.48
English Literature & Composition		2.90

American Indians

	Subset for alpha = .05		
AP subject	1	2	3
Chemistry	0.14		
Calculus	0.35	0.35	
Spanish	0.95	0.95	
English Literature & Composition		1.17	
U. S. History			2.04

Filipinos

	Subset for alpha = .05	
AP subject	1	2
Calculus	0.94	
U. S. History	1.21	
Spanish	1.22	
English Literature & Composition		4.02
Chemistry		5.17

Asians

	Subset for alpha = .05		
AP subject	1	2	3
Spanish	1.16		
English Literature & Composition		1.96	
U. S. History			3.12
Chemistry			3.25
Calculus			3.60

Hispanics

	Subset for alpha = .05		
AP subject	1	2	3
Calculus	0.36		
Chemistry	0.39		
English Literature & Composition	0.41		
U. S. History		0.56	
Spanish			1.49

Whites

	Subset for alpha = .05			
AP subject	1	2	3	4
Spanish	0.71			
Chemistry		0.93		
Calculus		1.10	1.10	
English Literature & Composition			1.14	1.14
U. S. History				1.28

Display 2-17

Class Size by SES Groups and AP Subject

SES Group	Mean*	95% Confidence Interval for Mean Lower Bound	Upper Bound	Minimum	Maximum
Very High	26.17	25.62	26.71	10	45
High	25.19	24.45	25.94	7	59
Low	23.82	22.95	24.68	4	42
Very Low	23.12	22.25	23.99	5	48
Total	24.67	24.29	25.05	4	59

*The mean for the Very-High group is significantly higher than the means for the Low and Very-Low groups. The mean for the High group is significantly higher than the mean for the Very-Low group (p = < .05 accounting for multiple comparisons)

AP Subject	Mean*	95% Confidence Interval for Mean Lower Bound	Upper Bound	Minimum	Maximum
English Literature &	23.60	23.01	24.19	5	40
U. S. History	29.53	28.86	30.21	10	59
Calculus	23.99	23.12	24.86	8	48
Chemistry	20.55	19.27	21.84	7	36
Spanish	22.90	22.02	23.78	4	42
Total	24.67	24.29	25.05	4	59

*The mean for U. S. History is significantly higher than for all other subjects. The mean for Chemistry is significantly lower than for all other subjects. (p = < .05, accounting for multiple comparisons)

Display 2-18

Class Size by School Size

School Enrollment	Mean*	95% Confidence Interval for Mean Lower Bound	Upper Bound	Minimum	Maximum
0 to 800	20.40	18.31	22.48	7	39.5
801 to 1300	22.22	21.33	23.11	8	41
1301 to 1800	23.54	22.88	24.20	5	59
1801 to 2400	25.40	24.68	26.12	4	42
2401 to 2999	27.09	26.32	27.86	10	42
3000 and more	23.70	22.39	25.01	8	48
Total	24.67	24.29	25.05	4	59

*Mean class size in schools from 0 to 800 is significantly lower than in all other groups, except schools from 801 to 1300. Mean class size in schools from 2401 to 2999 is significantly greater than in all other groups. (p = < .05, accoutnign for multiple comparisons)

Display 2-19

Class Size by AP Subject and SES Group

English Literature & Composition

	Subset for alpha = .05	
SES Groups	1	2
Very Low	21.8	
Low	22.0	
High		24.4
Very High		25.6

U. S. History

	Subset for alpha = .05		
SES Groups	1	2	3
Very High	26.2		
Very Low		29.5	
Low		30.2	30.2
High			32.6

Calculus

	Subset for alpha = .05		
SES Groups	1	2	3
Low	20.6		
Very Low	22.2	22.2	
High		24.1	
Very High			27.5

Chemistry

	Subset for alpha = .05		
SES Groups	1	2	3
High	14.9		
Very Low	19.3	19.3	
Low		22.9	22.9
Very High			25.4

Spanish

	Subset for alpha = .05	
SES Groups	1	2
Low	19.6	
Very Low	21.2	
High		24.8
Very High		25.6

Display 2-20

Do you Lack Instructional Materials That Are
Necessry to Prepare Students for the AP Exam?

SES Group	YES	NO	Total
Very High	34.6	65.4	100.0
High	40.0	60.0	100.0
Low	40.8	59.2	100.0
Very Low	60.6	39.4	100.0
Total	43.2	56.8	100.0

Pearson Chi-Square = 71.8 p = < .005

Display 2-21

Mean Percent of Calculus Students Lacking Own Graphing Calculator
By SES Groups

	Subset for alpha = .05		
SES Groups	1	2	3
Very High	5.0%		
High	5.5%		
Low		22.6%	
Very Low			33.6%

Percentage of AP Spanish Teachers Who Say They Lack
Equipment in Spanish Class
by SES Groups

	YES	NO	
Very High	29.6	70.4	100.0
High	30.1	69.9	100.0
Low	40.6	59.4	100.0
Very Low	81.5	18.5	100.0
Total	44.3	55.7	100.0

Pearson Chi-Square = 70.1 p = < .0005

Display 2-22

Percentage of Class Enrollment that Will Take the AP Exam
by SES Groups, School Size, and AP Sbuject

SES Group	Mean Percentage
Very High	87.3%
High	83.7%
Low	82.3%
Very Low	85.0%
Total	84.7%

School Size	Mean Percentage
0 to 800	72.0%*
801 to 1300	85.1%
1301 to 1800	86.8%
1801 to 2400	83.9%
2401 to 2999	84.7%
3000 and more	85.6%
Total	84.6%

AP Subject	Mean Percentage
English Literature & Com	80.4%
U. S. History	86.4%
Calculus	89.8%
Chemistry	86.4%
Spanish	81.5%
Total	84.6%

*Significantly different p = < .0005

Display 2-23

How Much Pressure from School Administrators to Achieve High Exam Scores?
By SES Group

	Percentage of Teachers Responding			
SES Group	A lot of pressure	Some pressu	No pressure	Total
Very High	21.8	48.9	29.2	100.0
High	29.2	33.7	37.1	100.0
Low	16.2	39.3	44.5	100.0
Very Low	3.2	50.9	45.9	100.0
Total	18.1	43.3	38.6	100.0

Pearson Chi-Square = 136.4 p = < .0005

Display 2-24

Assingment of Group Projects Outside of Class Time by AP Subject

AP Subject		Percentage of Teachers Responding YES	NO	Total
English Literature & Composition				
	% within AP subject	72.7	27.3	100.0
	Adjusted Residual	8.1	-8.1	
U. S. History				
	% within AP subject	71.0	29.0	100.0
	Adjusted Residual	6.6	-6.6	
Calculus				
	% within AP subject	38.4	61.6	100.0
	Adjusted Residual	-9.1	9.1	
Chemistry				
	% within AP subject	27.8	72.2	100.0
	Adjusted Residual	-7.7	7.7	
Spanish				
	% within AP subject	54.6	45.4	100.0
	Adjusted Residual	-1.3	1.3	
	Total	57.4	42.6	100.0

Person Chi-Square = 201.8 p = < .0005

Display 2-25

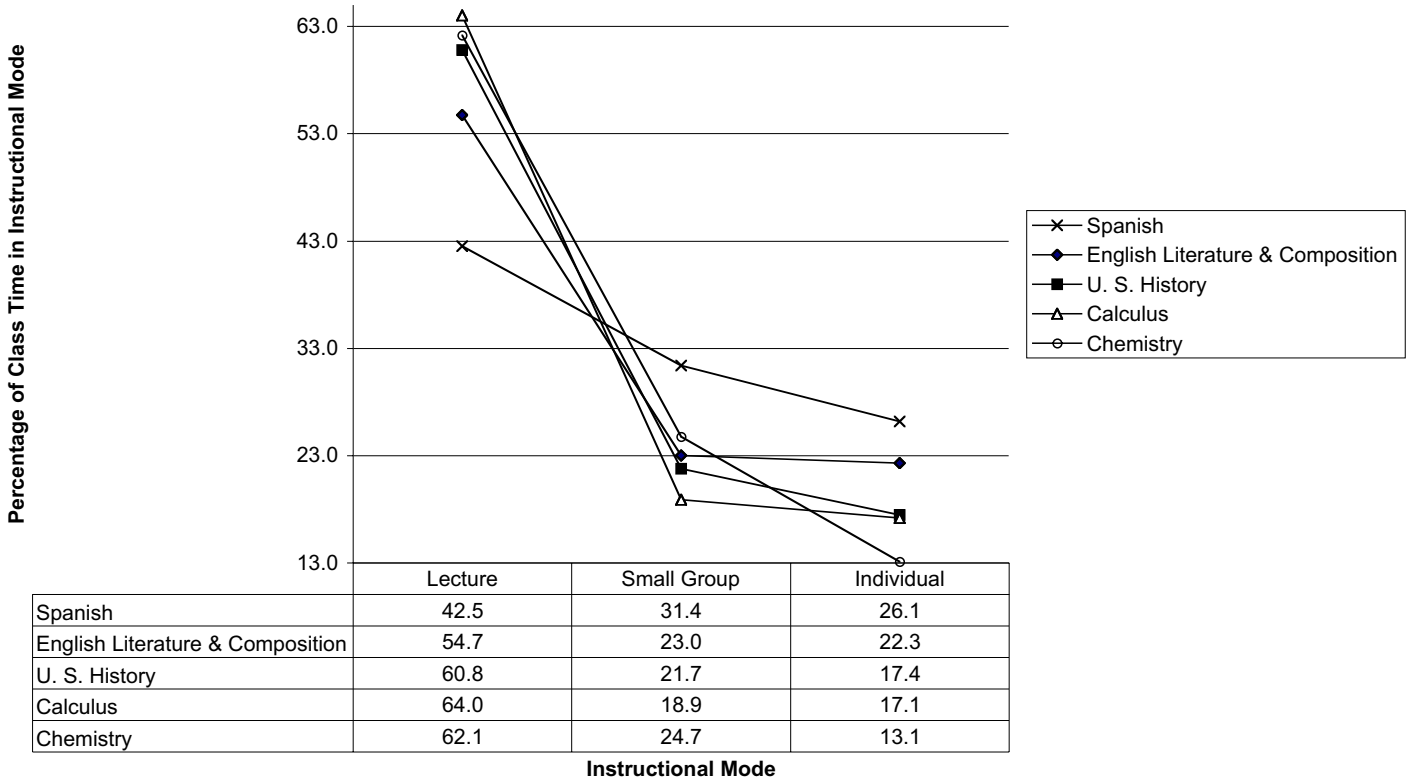
Assingment of Group Projects Outside of Class Time by AP Subject and SES group

AP subject	SES Groups	Statistic	Percentage Responding YES	NO	Total
English Literature & Composition	High SES	% within SES Group	58.1	41.9	100.0
		Adjusted Residual	-7.9	7.9	
	Low SES	% within SES Group	89.5	10.5	100.0
		Adjusted Residual	7.9	-7.9	
	Total		72.7	27.3	100.0
U. S. History	High SES	% within SES Group	69.4	30.6	100.0
		Adjusted Residual	-0.7	0.7	
	Low SES	% within SES Group	72.6	27.4	100.0
		Adjusted Residual	0.7	-0.7	
	Total		71.1	28.9	100.0
Calculus	High SES	% within SES Group	46.3	53.7	100.0
		Adjusted Residual	3.8	-3.8	
	Low SES	% within SES Group	28.4	71.6	100.0
		Adjusted Residual	-3.8	3.8	
	Total		38.4	61.6	100.0
Chemistry	High SES	% within SES Group	33.0	67.0	100.0
		Adjusted Residual	1.7	-1.7	
	Low SES	% within SES Group	20.0	80.0	100.0
		Adjusted Residual	-1.7	1.7	
	Total		28.3	71.7	100.0
Spanish	High SES	% within SES Group	39.3	60.7	100.0
		Adjusted Residual	-6.4	6.4	
	Low SES	% within SES Group	71.4	28.6	100.0
		Adjusted Residual	6.4	-6.4	
	Total		54.6	45.4	100.0

Differences between SES Groups are significant only for English Literature, Calculus, and Spanish.

Display 2-26

Instructional Mode by AP Subject



	Lecture	Small Group	Individual
Spanish	42.5	31.4	26.1
English Literature & Composition	54.7	23.0	22.3
U. S. History	60.8	21.7	17.4
Calculus	64.0	18.9	17.1
Chemistry	62.1	24.7	13.1

Display 3-1

Characteristics of High- and Low-Performing Classes

Group 1 = Very High SES and Extremely Low Scores
Group 6 = Very High SES and Extremely High Scores

Group	Percent of Scores 3 or Higher	Percent of Scores 4 or Higher	Female Teacher	Possess Doctorate YES	Ever Attend Summer Insitute YES	Ever Attend AP Workshop YES	Large Gaps in Student Preparation YES	Unqualified Students Not Admitted YES	Grade Required for Admission YES	Teacher Recomm. Required for Admission YES	Summer Project Required for Admission YES	How Important Take AP Exam Very Important	Should Require Exam If No Cost YES	Pressure for High Exam Scores No Pressure
1	45.1	23.3	12.5	0.0	10.4	100.0	100.0	2.1	85.4	89.6	6.3	22.9	27.1	70.8
6	95.0	69.3	45.7	17.3	37.1	69.2	20.4	42.3	63.3	58.5	25.3	69.2	51.0	11.5

Group	District Financial Support Minimal or None	Faculty Attiude Toward AP Classes Strong Support	Parent's Knowledge of AP Benefits All Parents Knowledgeable	Heard of Vertical Teaming YES	Effectivenss of Counselors Very Effective	Use Textbook YES	Have Discretionary Budget YES	Assign Outside Class Group Projects YES	Do You Provide College Counseling YES
1	23.9	81.3	93.8	16.7	70.8	89.6	66.7	25.0	88.4
6	52.9	57.6	34.3	54.8	28.3	68.0	37.0	45.5	32.3

Group	Mean Years Teaching	Mean Years Teaching AP Subject	Mean Number of AP Workshops Attended	Mean Percent Well-Prepared for Course	Mean Percent Not Prepared Enough for Course	Mean Percent Unprepared for Course	Mean Class Hours Practicing AP Exams	Mean Percent of Time in Lecture Mode	Mean Percent of Time in Small Group Mode	Mean Percent of Time in Indivdual Mode	Ethnic Compostion of Class: Mean Pecent Af-American	Mean Percent Asian	Mean Percent Hispanic	Mean Pecent White
1	29.9		8.0	36.0	22.4	14.1	17.0	39.8	28.1	32.3	3.5	8.2	25.8	52.9
6	21.5		2.1	71.7	4.4	0.0	11.6	57.7	22.7	19.6	0.3	30.4	5.2	60.7

Group	Ethnic Proportionality to School Ethnicity: Mean Ratio Af-American	Mean Ratio Asian	Mean Ratio Hispanic	Mean Ratio White	Mean Percent of Class Female	Mean Percent to Take AP Exam
1		3.4			60.4	72.3
6		2.1			55.0	85.3

Display 3-2

Characteristics of High- and Low-Performing Classes

Group 1 = Very High SES and Extremely- and Very-Low Scores
Group 2 = Very High SES and Mid-Range Scores
Group 3 = Very High SES and Very- and Extremely-High Scores

Group	Percent of Scores 3 or Higher	Percent of Scores 4 or Higher	Female Teacher	Possess Doctorate YES	Ever Attend Summer Insitute YES	Ever Attend AP Workshop YES	Adequacy of Effort to Help Feeder Schools Much More Effort Needed	Large Gaps in Student Preparation YES	Unqualified Students Not Admitted YES	Qualified Students Denied Admission Because Class Full YES	Teacher Recomm. Required for Admission YES	Exam Score Required for Admission YES	Summer Project Required for Admission YES	How Important Take AP Exam Very Importan	Is AP Exam Required YES	Should Require Exam If No Cost YES	Pressure for High Exam Scores No Pressure
1	45.7	22.4	19.0	2.6	17.7	91.0	17.7	72.2	2.6	1.3	63.3	15.4	9.1	45.6	16.5	55.1	50.6
2	65.5	33.5	56.6	0.0	59.5	93.4	45.3	39.7	33.6	21.2	90.6	1.8	1.8	91.8	50.0	70.2	31.1
3	89.5	61.3	52.1	12.5	31.9	56.3	14.9	38.3	31.9	2.1	62.3	30.7	18.1	75.0	21.5	47.9	16.0

Group	District Financial Support Minimal or None	Faculty Attiude Toward AP Classes Strong Support	Parent's Knowledge of AP Benefits All Parents Knowledgeable	Heard of Vertical Teaming YES	Effectiveness of Counselors Very Effective	Lack Materials To Prepare Students YES	Use Textbook YES	Have Discretionary Budget YES	Assign Outside Class Group Projects YES	Provide Weekend Group Sessions YES	Provide Afterschool Group Sessions YES	Provide Individual Tutoring YES	Do You Provide College Counseling YES
1	22.3			12.8	55.7	23.1	92.3	50.0	20.3	30.4	51.9	53.8	78.9
2	41.8			61.5	32.0	38.5	95.1	5.7	32.5	56.5	70.4	90.2	54.3
3	42.4			44.4	24.5	49.6	75.5	27.3	55.4	17.1	43.0	40.3	26.5

Group	Mean Years Teaching	Mean Years Teaching AP Subject	Mean Number of AP Summer Institutes Attended	Mean Number of AP Workshops Attended	Mean Number of Hours Prep Time Per Week	Mean Number of Times Meet Feeder School Teachers	Mean Class Enrollment	Mean Percent Well-Prepared for Course	Mean Percent Not Prepared Enough for Course	Mean Percent Unprepared for Course	Mean Class Hours Practicing AP Exams	Mean Percent of Time in Lecture Mode	Mean Percent of Time in Small Group Mode	Mean Percent of Time in Indivdual Mode	Ethnic Compostion of Class: Mean Pecent Af-American	Mean Percent Asian	Mean Percent Hispanic	Mean Pecent White
1	23.2	11.2	0.4	6.6	5.0	0.2	25.3	43.7	18.5	9.8	18.0			25.7	2.3	13.3	18.2	
2	22.9	7.2	0.9	2.8	7.3	0.6	27.8	71.7	7.5	2.0	10.2			17.0	0.5	23.3	8.1	
3	17.8	11.9	0.4	1.8	5.7	0.4	24.8	68.0	3.6	0.3	10.6			19.9	0.6	26.8	7.0	

Group	Ethnic Proportionality to School Ethnicity: Mean Ratio Af-American	Mean Ratio Asian	Mean Ratio Hispanic	Mean Ratio White	Mean Percent of Class Female	Mean Percent to Take AP Exam
1		3.8				76.9
2		3.8				90.7
3		2.6				85.1

Display 3-3

Characteristics of High- and Low-Performing Classes

Group 1 = Very-High and High SES and Extremely-Low, Very-Low, and Low Scores
Group 2 = Very-High and High SES and Extremely-High, Very-High, and High Scores

Group	Percent of Scores 3 or Higher	Percent of Scores 4 or Higher	Female Teacher	Possess Doctorate YES	Ever Attend Summer Insitute YES	Ever Attend AP Workshop YES	Adequacy of Effort to Help Feeder Schools Much More Needed	Large Gaps in Student Preparation YES	Unqualified Students Not Admitted YES	Qualified Students Denied Admission Because Class Full	Grade Required for Admission YES	Teacher Recomm. Required for Admission YES	Exam Score Required for Admission YES	Summer Project Required for Admission YES	How Important Take AP Exam Very Important	Is AP Exam Required YES	Should Require Exam If No Cost YES	Pressure for High Exam Scores No Pressure
1	50.5	24.8		1.0			42.1	50.7	3.0				8.0			18.2		39.1
2	83.0	54.6		5.4			19.4	31.0	26.3				18.2			39.5		23.4

Group	District Financial Support Minimal or None	Faculty Attiude Toward AP Classes Strong Support	Parent's Knowledge of AP Benefits All Parents Knowledgeable	Heard of Vertical Teaming YES	Effectiveness of Counselors Very Effective	Lack Materials To Prepare Students YES	Use Textbook YES	Have Discretionary Budget YES	Assign Outside Class Group Projects YES	Provide Weekend Group Sessions YES	Provide Afterschool Group Sessions YES	Provide Individual Tutoring YES	Do You Provide College Counseling YES
1	41.4	65.6	54.8	52.0									58.0
2	32.7	55.9	39.9	41.6									25.0

Group	Mean Years Teaching	Mean Years Teaching AP Subject	Mean Number of AP Summer Institutes Attended	Mean Number of AP Workshops Attended	Mean Number of Hours Prep Time Per Week	Mean Number of Times Meet Feeder School Teachers	Mean Class Enrollment	Mean Percent Well-Prepared for Course	Mean Percent Not Prepared Enough for Course	Mean Percent Unprepared for Course	Mean Class Hours Practicing AP Exams	Mean Percent of Time in Lecture Mode	Mean Percent of Time in Small Group Mode	Mean Percent of Time in Indivdual Mode	Ethnic Compostion of Class: Mean Pecent Af-American	Mean Percent Asian	Mean Percent Hispanic	Mean Pecent White
1		8.1	0.7	4.0		0.3		52.2	12.7		14.4	49.0		24.4	3.1			
2		9.7	0.5	2.9		0.8		66.0	8.9		10.5	57.1		18.9	1.1			

Group	Ethnic Proportionality to School Ethnicity: Mean Ratio Af-American	Mean Ratio Asian	Mean Ratio Hispanic	Mean Ratio White	Mean Percent of Class Female	Mean Percent to Take AP Exam
1				1.03	59.5	77.2
2				0.91	52.4	86.2

Display 3-4

Characteristics of High- and Low-Performing Classes

Group 1 = Very-High and High SES and Extremely-Low and Very-Low Scores
Group 2 = Very-High and High SES and Mid-Range Scores
Group 3 = Very-High and High SES and Extremely-High and Very-High Scores

Group	Percent of Scores 3 or Higher	Percent of Scores 4 or Higher	Female Teacher	Possess Masters YES	Possess Doctorate YES	Ever Attend Summer Insitute YES	Ever Attend AP Workshop YES	Adequacy of Effort to Help Feeder Schools Much More Needed	Large Gaps in Student Preparation YES	Unqualified Students Not Admitted YES	Qualified Students Denied Admission Because Class Full	Grade Required for Admission YES	Teacher Recomm. Required for Admission YES	Exam Score Required for Admission YES	Summer Project Required for Admission YES	How Important Take AP Exam Very Important	Is AP Exam Required YES	Should Require Exam If No Cost YES	Pressure for High Exam Scores No Pressure
1	44.6	20.8	31.0	75.9	1.9	20.5		45.0	58.9	1.2	6.9	57.4		7.5	8.1	51.9	9.3	68.5	30.2
2	63.3	34.1	40.4	67.7	0.0	56.0		29.8	36.2	19.1	17.3	56.8		6.9	21.9	72.0	44.3	85.5	38.7
3	86.7	59.2	49.8	60.2	7.3	27.1		21.4	30.8	21.2	1.1	71.2		22.8	16.0	75.6	29.7	52.6	23.8

Group	District Financial Support Minimal or None	Faculty Attiude Toward AP Classes Strong Support	Parent's Knowledge of AP Benefits All Parents Knowledgeable	Heard of Vertical Teaming YES	Vertical Teaming Part of Program YES	Effectiveness of Counselors Very Effective	Lack Materials To Prepare Students YES	Use Textbook YES	Have Discretionary Budget YES	Assign Outside Class Group Projects YES	Provide Weekend Group Sessions YES	Provide Afterschool Group Sessions YES	Provide Individual Tutoring YES	Do You Provide College Counseling YES
1	32.1		32.7	38.3	37.1	41.4		80.7	27.3		22.3	42.5	66.7	59.5
2	40.2		59.6	59.7	48.2	21.0		97.4	13.2		38.3	74.6	87.6	37.3
3	39.8		43.9	39.3	25.3	38.0		86.6	20.5		25.5	54.4	64.7	30.4

Group	Mean Years Teaching	Mean Years Teaching AP Subject	Mean Number of AP Summer Institutes Attended	Mean Number of AP Workshops Attended	Mean Number of Hours Prep Time Per Week	Mean Number of Times Meet Feeder School Teachers	Mean Class Enrollment	Mean Percent Well-Prepared for Course	Mean Percent Not Prepared Enough for Course	Mean Percent Unprepared for Course	Mean Class Hours Practicing AP Exams	Mean Percent of Time in Lecture Mode	Mean Percent of Time in Small Group Mode	Mean Percent of Time in Indivdual Mode	Ethnic Compostion of Class: Mean Pecent Af-American	Mean Percent Asian	Mean Percent Hispanic	Mean Pecent White
1		8.3	0.3	4.2	4.8	0.1		41.8	17.6		17.3	49.1	22.3	28.7	3.9	9.6	17.7	62.0
2		7.0	1.0	3.7	7.1	0.4		63.8	8.1		11.2	51.4	29.9	18.7	1.3	19.2	17.2	54.5
3		11.1	0.3	2.5	5.9	1.0		67.5	8.4		9.9	58.0	23.1	18.8	0.9	22.8	8.3	62.1

Group	Ethnic Proportionality to School Ethnicity: Mean Ratio Af-American	Mean Ratio Asian	Mean Ratio Hispanic	Mean Ratio White	Mean Percent of Class Female	Mean Percent to Take AP Exam
1		3.5		1.1	60.6	72.7
2		2.7		0.9	58.8	86.5
3		2.3		1.0	49.8	84.0

Display 3-5

Characteristics of High- and Low-Performing Classes

Group 19 = Very Low SES and Extremely Low Scores
Group 24 = Very Low SES and Extremely High Scores

Group	Percent of Scores 3 or Higher	Percent of Scores 4 or Higher	Female Teacher	Possess Masters YES	Possess Doctorate YES	Ever Attend Summer Insitute YES	Ever Attend AP Workshop YES	Adequacy of Effort to Help Feeder Schools Much More Needed	Large Gaps in Student Preparation YES	Unqualified Students Not Admitted YES	Qualified Students Denied Admission Because Class Full	Grade Required for Admission YES	Teacher Recomm. Required for Admission YES	Exam Score Required for Admission YES	Summer Project Required for Admission YES	How Important Take AP Exam Very Important	Is AP Exam Required YES	Should Require Exam If No Cost YES	Pressure for High Exam Scores No Pressure
19	14.5	6.0		53.3			83.2	55.5		22.4	9.3	49.5	39.3	29.0			62.5		
24	94.4	55.3		17.4			21.7	78.3		47.8	47.8	82.8	65.2	0.0			87.0		

Group	District Financial Support Minimal or None	Faculty Attiude Toward AP Classes Strong Support	Principal Attitude Toward AP Classes Strong Support	Parent's Knowledge of AP Benefits All Parents Knowledgeable	Heard of Vertical Teaming YES	Vertical Teaming Part of Program YES	Effectiveness of Counselors Very Effective	Lack Materials To Prepare Students YES	Use Textbook YES	Have Discretionary Budget YES	Assign Outside Class Group Projects YES	Provide Weekend Group Sessions YES	Provide Afterschool Group Sessions YES	Provide Individual Tutoring YES	Do You Provide College Counseling YES
19		44.6	59.8	24.3			60.7					40.6			
24		17.4	100.0	0.0			13.0					65.2			

Group	Mean Years Teaching	Mean Years Teaching AP Subject	Mean Number of AP Summer Institutes Attended	Mean Number of AP Workshops Attended	Mean Number of Hours Per Time Per Week	Mean Number of Times Meet Feeder Schoo Teachers	Mean Class Enrollment	Mean Percent Well-Prepared for Course	Mean Percent Not Prepared Enough for Course	Mean Percent Unprepared for Course	Mean Class Hours Practicing AP Exams	Mean Percent of Time in Lecture Mode	Mean Percent of Time in Small Group Mode	Mean Percent of Time in Individual Mode	Ethnic Compostion of Class: Mean Pecent Af-American	Mean Percent Asian	Mean Percent Hispanic	Mean Pecent White
19	15.1	3.5			6.7	0.2		22.2				48.0	32.4	19.5				33.1
24	23.7	8.9			3.9	1.3		73.2				71.7	20.4	7.8				18.8

Group	Ethnic Proportionality to School Ethnicity: Mean Ratio Af-American	Mean Ratio Asian	Mean Ratio Hispanic	Mean Ratio White	Mean Percent of Class Female	Mean Percent to Take AP Exam	Percent of Class grade 11	Percent of Class grade 12
19		2.2			67.4	82.5	42.2	54.2
24		3.7			42.8	95.3	70.3	26.9

Display 3-6

Characteristics of High- and Low-Performing Classes

Group 19-20 = Very-Low SES and Extremely- and Very-Low Scores
Group 21-22 = Very-Low SES and Mid-Range Scores
Group 23-24 = Very-Low SES and Very- and Extremely-High Scores

Group	Percent of Scores 3 or Higher	Percent of Scores 4 or Higher	Female Teacher	Possess Masters YES	Possess Doctorate YES	Ever Attend Summer Insitute YES	Ever Attend AP Workshop YES	Adequacy of Effort to Help Feeder Schools Much More Needed	Large Gaps in Student Preparation YES	Unqualified Students Not Admitted YES	Qualified Students Denied Admission Because Class Full	Grade Required for Admission YES	Teacher Recomm. Required for Admission YES	Exam Score Required for Admission YES	Summer Project Required for Admission YES	How Important Take AP Exam Very Important	Is AP Exam Required YES	Should Require Exam If No Cost YES	Pressure for High Exam Scores No Pressure
19-20	19.4	8.3	64.5	50.0			86.3	59.6	88.9				41.0	24.5	33.1		60.3		33.8
21-22	53.8	26.5	25.6	81.4			93.0	25.0	61.4				27.9	7.0	4.8		36.4		43.2
23-24	75.6	43.0	82.1	65.5			56.0	82.1	84.5				78.6	0.0	4.8		35.7		17.9

Group	District Financial Support Minimal or None	Faculty Attiude Toward AP Classes Strong Support	Principal Attitude Toward AP Classes Strong Support	Parent's Knowledge of AP Benefits All Parents Knowledgeable	Heard of Vertical Teaming YES	Vertical Teaming Part of Program YES	Effectiveness of Counselors Very Effective	Lack Materials To Prepare Students YES	Use Textbook YES	Have Discretionary Budget YES	Assign Outside Class Group Projects YES	Provide Weekend Group Sessions YES	Provide Afterschool Group Sessions YES	Provide Individual Tutoring YES	Do You Provide College Counseling YES
19-20	52.5	38.7	51.8	20.9	66.2		49.6	59.5			72.5		68.3	84.9	72.1
21-22	38.6	48.8	88.4	27.3	40.9		61.0	29.5			53.5		68.6	96.9	27.5
23-24	67.9	15.7	91.7	10.7	38.1		22.6	69.0			41.7		95.2	40.7	34.6

Group	Mean Years Teaching	Mean Years Teaching AP Subject	Mean Number of AP Summer Institutes Attended	Mean Number of AP Workshops Attended	Mean Number of Hours Prep Time Per Week	Mean Number of Times Meet Feeder Schoo Teachers	Mean Class Enrollment	Mean Percent Well-Prepared for Course	Mean Percent Not Prepared Enough for Course	Mean Percent Unprepared for Course	Mean Class Hours Practicing AP Exams	Mean Percent of Time in Lecture Mode	Mean Percent of Time in Small Group Mode	Mean Percent of Time in Indivdual Mode	Ethnic Compostion of Class: Mean Pecent Af-American	Mean Percent Asian	Mean Percent Hispanic	Mean Pecent White
19-20	15.6	4.3	0.7	1.8		0.1	20.3	23.8	16.5	10.5		51.7	30.9	17.4	8.6	26.0		29.3
21-22	21.6	10.5	0.6	2.9		0.7	27.1	56.3	11.3	1.1		60.5	18.3	21.2	1.1	56.1		11.7
23-24	16.3	7.9	1.6	1.4		0.6	31.8	45.4	28.5	9.5		76.0	16.2	7.8	2.8	29.6		30.8

Group	Ethnic Proportionality to School Ethnicity: Mean Ratio Af-Americar	Mean Ratio Asian	Mean Ratio Hispanic	Mean Ratio White	Mean Percent of Class Female	Mean Percent to Take AP Exam	Percent of Class grade 11	Percent of Class grade 12
19-20			0.46	1.59	63.00	85.30	42.10	54.70
21-22			0.30	0.42	51.70	95.70	61.20	38.30
23-24			0.69	1.58	49.40	77.60	65.50	33.80

Display 3-7

Characteristics of High- and Low-Performing Classes

Group 3 = Very-Low and Low SES and Extremely-Low, Very-Low, and Low Scores
Group 4 = Very-Low and Low SES and Extremely-High, Very-High, and High Scores

Group	Percent of Scores 3 or Higher	Percent of Scores 4 or Higher	Female Teacher	Possess Masters YES	Possess Doctorate YES	Ever Attend Summer Insitute YES	Ever Attend AP Workshop YES	Adequacy of Effort to Help Feeder Schools Much More Needed	Large Gaps in Student Preparation YES	Unqualified Students Not Admitted YES	Qualified Students Denied Admission Because Class Full	Grade Required for Admission YES	Teacher Recomm. Required for Admission YES	Exam Score Required for Admission YES	Summer Project Required for Admission YES	How Important Take AP Exam Very Important	Is AP Exam Required YES	Should Require Exam If No Cost YES	Pressure for High Exam Scores No Pressure
3	35.6	15.9	53.1			39.5			81.9				35.5				33.4	76.5	45.1
4	75.8	43.8	66.5			51.9			68.1				63.0				20.7	64.9	25.0

Group	District Financial Support Minimal or None	Faculty Attiude Toward AP Classes Strong Support	Principal Attitude Toward AP Classes Strong Support	Parent's Knowledge of AP Benefits All Parents Knowledgeable	Heard of Vertical Teaming YES	Vertical Teaming Part of Program YES	Effectiveness of Counselors Very Effective	Lack Materials To Prepare Students YES	Use Textbook YES	Have Discretionary Budget YES	Assign Outside Class Group Projects YES	Provide Weekend Group Sessions YES	Provide Afterschool Group Sessions YES	Provide Individual Tutoring YES	Do You Provide College Counseling YES
3	45.4		63.1	26.3		20.4		40.9	79.6		68.4	23.2	60.6	85.1	56.0
4	60.6		79.8	8.7		3.4		59.1	92.8		55.3	38.9	78.2	71.1	32.8

Group	Mean Years Teaching	Mean Years Teaching AP Subject	Mean Number of AP Summer Institutes Attended	Mean Number of AP Workshops Attended	Mean Number of Hours Prep Time Per Week	Mean Number of Times Meet Feeder School Teachers	Mean Class Enrollment	Mean Percent Well-Prepared for Course	Mean Percent Not Prepared Enough for Course	Mean Percent Unprepared for Course	Mean Class Hours Practicing AP Exams	Mean Percent of Time in Lecture Mode	Mean Percent of Time in Small Group Mode	Mean Percent of Time in Indivdual Mode	Mean Pecent Af-American	Ethnic Compostion of Class: Mean Percent Asian	Ethnic Compostion of Class: Mean Percent Hispanic	Mean Pecent White
3		6.9		1.7		0.2	23.7	34.8			20.4	55.9	26.8	17.3	6.5	22.3	23.4	36.9
4		8.4		2.3		0.7	28.0	50.8			13.4	67.0	18.8	14.1	2.7	28.9	29.8	29.7

Group	Ethnic Proportionality to School Ethnicity: Mean Ratio Af-American	Mean Ratio Asian	Mean Ratio Hispanic	Mean Ratio White	Mean Percent of Class Female	Mean Percent to Take AP Exam	Percent of Class grade 11	Percent of Class grade 12
3			0.52		60.60		40.20	57.70
4			0.70		53.70		59.90	39.30

Display 3-8

Characteristics of High- and Low-Performing Classes

Group 4 = Very-Low and Low SES and Extremely-Low and Very-Low Scores
Group 5 = Very-Low and Low SES and Mid-Range Scores
Group 6 = Very-Low and Low SES and Extremely-High and Very-High Scores

Group	Percent of Scores 3 or Higher	Percent of Scores 4 or Higher	Female Teacher	Possess Masters YES	Possess Doctorate YES	Attend Summer Insitute YES	Attend AP Workshop YES	Adequacy of Effort to Help Feeder Schools Much More Needed	Large Gaps in Student Preparation YES	Unqualified Students Not Admitted YES	Qualified Students Denied Admission Because Class Full	Grade Required for Admission YES	Teacher Recomm. Required for Admission YES	Exam Score Required for Admission YES	Summer Project Required for Admission YES	How Important Take AP Exam Very Important	Is AP Exam Required YES	Should Require Exam If No Cost YES	Pressure for High Exam Scores No Pressure
4	23.9	10.5	46.0			33.7		67.2	80.3	18.0	4.2		46.6	22.4	27.6	83.1	43.8	91.1	42.4
5	64.4	32.3	64.4			50.0		62.3	82.7	32.8	16.1		24.7	4.7	30.0	44.3	9.8	46.6	43.7
6	78.3	45.1	70.0			54.7		66.0	65.1	25.3	7.3		66.7	12.8	8.8	86.0	25.3	70.7	24.0

Group	District Financial Support Minimal or None	Faculty Attiude Toward AP Classes Strong Support	Principal Attitude Toward AP Classes Strong Support	Parent's Knowledge of AP Benefits All Parents Knowledgeable	Heard of Vertical Teaming YES	Vertical Teaming Part of Program YES	Effectiveness of Counselors Very Effective	Lack Materials To Prepare Students YES	Use Textbook YES	Have Discretionary Budget YES	Assign Outside Class Group Projects YES	Provide Weekend Group Sessions YES	Provide Afterschool Group Sessions YES	Provide Individual Tutoring YES	Do You Provide College Counseling YES
4			56.1	32.2		15.1	34.0				65.9		65.4	85.1	63.3
5			77.0	10.9		24.0	23.8				75.9		58.0	89.5	41.8
6			82.0	9.3		1.2	22.7				46.0		79.2	61.2	29.9

Group	Mean Years Teaching	Mean Years Teaching AP Subject	Mean Number of AP Summer Institutes Attended	Mean Number of AP Workshops Attended	Mean Number of Hours Prep Time Per Week	Mean Number of Times Meet Feeder School Teachers	Mean Class Enrollment	Mean Percent Well-Prepared for Course	Mean Percent Not Prepared Enough for Course	Mean Percent Unprepared for Course	Mean Class Hours Practicing AP Exams	Mean Percent of Time in Lecture Mode	Mean Percent of Time in Small Group Mode	Mean Percent of Time in Individual Mode	Ethnic Compostion of Class: Mean Pecent Af-American	Ethnic Compostion of Class: Mean Percent Asian	Ethnic Compostion of Class: Mean Percent Hispanic	Ethnic Compostion of Class: Mean Pecent White
4	15.9	5.2	0.5	1.5		0.3	22.3	30.6	20.4	8.6		53.1	29.2	17.7	7.7	18.1		39.0
5	23.4	9.7	1.5	1.7		0.2	27.0	47.8	14.9	4.1		59.9	22.7	17.4	3.0	30.2		28.4
6	17.9	8.6	1.2	2.8		0.8	28.3	48.8	22.6	8.0		71.5	16.4	12.0	3.0	30.0		33.2

Group	Ethnic Proportionality to School Ethnicity: Mean Ratio Af-American	Mean Ratio Asian	Mean Ratio Hispanic	Mean Ratio White	Mean Percent of Class Female	Mean Percent to Take AP Exam	Percent of Class grade 11	Percent of Class grade 12
4	0.37			1.46	63.10		42.60	54.40
5	0.59			0.81	56.20		43.60	55.60
6	0.37			1.53	51.60		59.30	40.30

Display A-1

Number of Classes in Sample by AP Subject, School Size, SES Group, and 1999 School Performance on AP Exam

U. S. History

School Size			SES Groups: Very High	High	Low	Very Low	Total
Small (enrollment less than 1000)	1999 Performance on AP exams	Extremely Low		1	1	1	3
		Very Low	2	1	1	1	5
		Low	1				1
		High	1	1	1		3
		Very High	1	1	1		3
		Extremely High	1				1
	Subtotal		6	4	4	2	16
Medium (enrollment 1000 to 1999)	1999 Performance on AP exams	Extremely Low		1	1	1	3
		Very Low	1	1	1		3
		Low	1	2	1	1	5
		High	1	1	1	1	4
		Very High	1		1	2	4
		Extremely High	1		2	2	5
	Subtotal		5	5	7	7	24
Large (enrollment 2000 or greater)	1999 Performance on AP exams	Extremely Low		1	1		2
		Very Low	2		1	1	4
		Low	1	1	1		3
		High	1	1	1	1	4
		Very High		1	1	1	3
		Extremely High	1	1	1	1	4
	Subtotal		5	5	6	4	20
Total			16	14	17	13	60

Spanish Language

School Size			SES Groups: Very High	High	Low	Very Low	Total
Small (enrollment less than 1000)	1999 Performance on AP exams	Extremely Low	1				1
		Very Low	1		1		2
		Low	1				1
		High	1			1	2
		Very High	1				1
		Extremely High			1	1	2
	Subtotal		5		2	2	9
Medium (enrollment 1000 to 1999)	1999 Performance on AP exams	Extremely Low	1	1	1		3
		Very Low	1	1	1	1	4
		Low	1		2		3
		High	1	1	1		3
		Very High	1	1		1	3
		Extremely High	1		1		2
	Subtotal		6	4	6	2	18
Large (enrollment 2000 or greater)	1999 Performance on AP exams	Extremely Low	1	1		2	4
		Very Low	1	1	1		3
		Low	1			1	2
		High	1	1	1	1	4
		Very High	2	1	1	1	5
		Extremely High		2	1	1	4
	Subtotal		6	6	4	6	22
Total			17	10	12	10	49

Display A-1 (continued)

English Literature and Compostion

School Size			SES Groups: Very High	High	Low	Very Low	Total
Small (enrollment less than 1000)	1999 Performance on AP exams	Extremely Low	1	1	1	1	4
		Very Low	1		2	1	4
		Low	1	1			2
		High	1	1	1		3
		Very High	1		1		2
		Extremely High	1	1			2
	Subtotal		6	4	5	2	17
Medium (enrollment 1000 to 1999)	1999 Performance on AP exams	Extremely Low		1	1	1	3
		Very Low	2	1	1	1	5
		Low		1	1		2
		High	1	1	1		3
		Very High	1	1		3	5
		Extremely High	1		1	1	3
	Subtotal		5	5	5	6	21
Large (enrollment 2000 or greater)	1999 Performance on AP exams	Extremely Low			1	1	2
		Very Low	1	1	1		3
		Low	1	1	1	1	4
		High	1	1		1	3
		Very High	1	1	1	1	4
		Extremely High	1			1	2
	Subtotal		5	4	4	5	18
Total			16	13	14	13	56

Chemistry

School Size			SES Groups: Very High	High	Low	Very Low	Total
Small (enrollment less than 1000)	1999 Performance on AP exams	Extremely Low	1		1	1	3
		Very Low		1		1	2
		Low			1		1
		Very High	1				1
		Extremely High	1	1			2
	Subtotal		3	2	2	2	9
Medium (enrollment 1000 to 1999)	1999 Performance on AP exams	Extremely Low		1	1	1	3
		Very Low		4		1	5
		Low	3	1	1		5
		High	1	2	2	1	6
		Very High	1	2	2	3	8
		Extremely High	1		1	1	3
	Subtotal		6	10	7	7	30
Large (enrollment 2000 or greater)	1999 Performance on AP exams	Very Low	1	1		1	3
		Low	2	1		2	5
		High		1		2	3
		Very High	1	1	2	2	6
		Extremely High	1	1			2
	Subtotal		5	5	2	7	19
Total			14	17	11	16	58

Display A-1 (continued)

Calculus

School Size			SES Groups: Very High	High	Low	Very Low	Total
Small (enrollment less than 1000)	1999 Performance on AP exams	Extremely Low			1	1	2
		Very Low	2	1		1	4
		Low		1	1		2
		High	1		1		2
		Very High	1		1		2
		Extremely High	1	1	1		3
	Subtotal		5	3	5	2	15
Medium (enrollment 1000 to 1999)	1999 Performance on AP exams	Extremely Low		2	1	1	4
		Very Low	2		1	1	4
		Low	2	1	1	2	6
		High	1	2	1	1	5
		Very High	1	1		3	5
		Extremely High	1	1	1		3
	Subtotal		7	7	5	8	27
Large (enrollment 2000 or greater)	1999 Performance on AP exams	Extremely Low			1	1	2
		Very Low	2	1			3
		Low	1	1	1	1	4
		High	1	1	1	1	4
		Very High	1	1	1	2	5
		Extremely High	1	1	1		3
	Subtotal		6	5	5	5	21
Total			18	15	15	15	63

Display A-2

Masters Degree Fields by AP Subject

Masters Field	Weighted Frequency	Percent
English Literature & Composition		
Curriculum & Instruction	29	5.7
Secondary Education	4.5	0.9
Education	58.5	11.4
Education Administration	4	0.8
English	169	33.1
Theater Arts	14	2.7
English/Reading	6	1.2
English Literature	21	4.1
English Education	33	6.5
Philosophy/Education	3	0.6
Comparative Literature	2	0.4
European Fiction	26	5.1
School Counseling	1	0.2
Not applicable--no masters degree	140	27.4
Total	511	100.0
U. S. History		
Social Science	1	0.2
Educational/Instructional Technology	12	2.8
Administration	8	1.8
Education	59	13.5
Educational Psychology	1	0.2
History	66	15.2
U. S. History	12	2.8
Canadian/American Relations	8	1.8
Psychology/research	8	1.8
Social Ecology	8	1.8
European History	3	0.7
Social Science Education	11	2.5
Music History	8	1.8
Public Administration	2	0.5
American Studies	20	4.6
Not applicable--no masters degree	208.5	47.9
Total	435.5	100.0
Calculus		
Secondary Education	8	1.9
Education	23.3	5.4
Computer Education	9	2.1
Mathematics	97.5	22.6
Mathematics Education	69	16.0
Education Administration	17	3.9
Philosophy	8	1.9
Educational Technology	23	5.3
Physics	7.5	1.7
Engineering	6	1.4
Theoretical Physics	15	3.5
Not applicable--no masters degree	148.5	34.4
Total	431.8	100.0

Masters Field	Weighted Frequency	Percent
Chemistry		
Curriculum & Instruction	1	0.7
Education	4.5	3.0
Educational Psychology	11	7.3
Chemistry	5	3.3
Zoology	2	1.3
Education/physics instruction	4	2.7
Computer Education	8	5.3
Chemical Engineering	1.25	0.8
Biology	5.7	3.8
Instruction	4	2.7
Biochemistry	2	1.3
Instructional Design	1	0.7
Cell & Developmental Molecular Biology	1	0.7
Teaching	1	0.7
Science Education	1	0.7
Environmental Science	1	0.7
Educational Counseling	1	0.7
Physical Science	2	1.3
Education/Medical Technology	3	2.0
Educational Systems Management	2	1.3
Geology	2	1.3
Mathematics	2	1.3
Not applicable--no masters degree	84.4	56.3
Total	149.8	100.0
Spanish		
Spanish	58.3	14.3
Social Science	32	7.8
Curriculum & Instruction	13	3.2
Educational/Instructional Technology	7	1.7
Pupil Personnel	9	2.2
Library Science/Media	2.5	0.6
Spanish Literature and Linguistics	13	3.2
Spanish Literature	9	2.2
Administration	24	5.9
Secondary Education	2	0.5
Education	23.3	5.7
Educational Psychology	3	0.7
Spanish/English	14	3.4
Foreign Language Education	6	1.5
Not applicable--no masters degree	192	47.0
Total	408.2	100.0

Appendix B

Survey Questions

School_____ District _____

AP TEACHER SURVEY – ENGLISH LITERATURE & COMPOSITION

Please answer all questions about 1999-2000 school year, except where indicated.

1. What is your gender? Female ____ Male ____

2. Which of the following **best describes you**? (check one)

African American ____	American Indian/Alaskan ____
Asian or Asian American ____	Filipino ____
Hispanic, Latino, or Chicano ____	Pacific Islander ____
White (non-Hispanic) ____	Other ____

3. How many **years** have you been **teaching**? ____ years teaching.

4. How many **years** have you **taught AP English Lit**? ____ years teaching AP English Lit.

5. **Did you teach** AP English Lit **last year** (in **1998-99**)? YES ____ NO ____

   IF YES, approximately **what percentage** of your students **who took the AP English Lit exam last year** (in the Spring of **1999**) achieved a **score of 3 or higher**? _____ percent

6. What was your **undergraduate college major**? _____

7. What was your **undergraduate college minor**, if any? _____

8. Do you have a **Masters degree**? YES____ NO ____

   IF YES, in what **field** is your Masters degree? _____
   —**field** of 2nd Masters degree, if any? _____

9. Do you have a **Ph.D., Ed.D**., or other Doctorate? YES ____ NO ____

   IF YES, in what **field** is your Doctorate? _____

10. Have you ever attended an **AP Summer Institute** in English Lit? YES ____ NO ____

    IF YES, how many AP English Lit **Summer Institutes** have you **attended**? _____

11. Have you ever attended an AP English Lit **Workshop** (usually a **2-day weekend session**)?
    YES ____ NO ____.

    IF YES, how many AP English Lit **Workshops** have you **attended**? _____

12. How many **hours of "Prep" time** do you have **per week** during your contract workweek?
    _____ hours of prep time **per week**

13. **Approximately** how many times this school year will you meet with teachers from your **feeder schools** to discuss student **preparation** for AP English Lit?
    _____ times this year **meeting with feeder-school teachers.**

14. **How adequate** are the efforts **in your high school** to **help** your **feeder schools** prepare students for success in AP English Lit?

The effort is **adequate** ____
More effort is needed ____
Much more effort is needed ____

Questions about your 1999-2000 AP English Lit class. If you are teaching more than one AP English Lit class this year, please answer these questions about the class that you teach earliest in the day.

15. What is the **enrollment** in your AP English Lit class? ____

16. What is the **ethnic composition** of your AP English Lit class?

	Number of Students
African American	_____
American Indian or Alaskan	_____
Asian or Asian American	_____
Hispanic, Latino, or Chicano	_____
Filipino	_____
Pacific Islander	_____
White (non-Hispanic)	_____
Other	_____

17. What is the **grade-level** composition of your AP English Lit class?

	Number of Students
9th grade	_____
10th grade	_____
11th grade	_____
12th grade	_____

18. What is the **gender** composition of your AP English Lit class?

	Number of Students
Female	_____
Male	_____

19. **How many** students in your AP English Lit class are **English Language Learners**? ____

20. **How many** of your AP English Lit students **took** the AP exam **this year**? _____

21. **How well prepared** were your students to take AP English Lit?

_____ percent were **very well prepared**
_____ percent were **somewhat prepared**
_____ percent were **not prepared enough**
_____ percent were **very unprepared**
100 percent

22. Have you found any **large gaps** (in other words, **consistent deficiencies**) in the preparation of students for your AP English Lit class? YES ____ NO ____

IF YES, would you please describe these gaps:

_____

_____

_____

23. This year, were any students who **wanted** to take your AP English Lit class **not admitted** because they were **not qualified**? YES ____ NO ____

24. This year, did you have to turn down any **qualified** students for admission to your AP English Lit class because the class was **full**? YES ____ NO ____

25. **Please list** all **pre-requisite courses** a student **must take** in order to be eligible to take your AP English Lit class:

Required Prerequisite Courses

_____

_____

_____

_____

26. Do you **require** any of the following for **admission** to your AP English Lit class?

	Is It Required for Admission?
(a) Achieving a **specific grade** in a prerequisite course	YES ____ NO ____
(b) A favorable **recommendation** from another teacher	YES ____ NO ____
(c) Achieving a **specific score** on an exam	YES ____ NO ____
(d) Successfully completing a **summer/intercession project** prior to the beginning of your AP English Lit class	YES ____ NO ____

27. **How important** is it **to you** that AP students **take the AP exam**?

Very Important ____
Somewhat Important ____
Not Important ____

28. Are students in your AP English Lit class **required to take the AP exam**? YES ___ NO ___

29. **If there were no cost** to take an AP exam, do you think AP students **should be required** to take the exam? YES ____ NO ____

30. **How much pressure** is there on you **from school administrators** to have your students **achieve high scores** on the AP English Lit exam?

A lot of pressure _____
Some pressure _____
No pressure ____

31. How good has been the financial support provided by the **district administration** for the **AP program** in your high school?

Excellent financial support ____
Adequate financial support ____
Minimal support ____
No support ____
No support, district administration **opposes** AP classes ____

32. **What is the attitude** of your **principal** toward offering AP classes in your high school?

Strongly supports _____
Mildly supports ____
Indifferent ____
Opposes AP classes ____

33. **What is the attitude** of **most** of the **teachers** in this school toward offering AP classes?

Most teachers **strongly** support ____
Most teachers **mildly** support ____
Most teachers are **indifferent** ____
Most teachers **oppose** AP classes ____

34. **How much knowledge** do the **parents** of your AP students have about the **benefits** of AP classes (such as the **extra grade point** and **college credit**)?

Virtually all parents know about the benefits ____
Many parents know about the benefits ____
A Few of the parents know about the benefits ____
None of the parents knows about the benefits ____
I am **not sure** about the knowledge of the parents ____

35. Have you heard of "**Vertical Teaming**?" YES ____ NO ___

IF YES, is **"Vertical Teaming"** a part of the English program in your school?
YES ___NO ____

36. How **effective** are the **counselors** in your school at helping students **from low-income families** go to college?

Very effective ____
Somewhat effective ____
Ineffective ____
I don't know ____

37. Are there any **instructional materials** you need in your AP English Lit class **to prepare students** for **the AP exam** that you are **lacking**? YES ____ NO ____

IF YES, What materials are you lacking? _____

_____

38. Do the students use a **textbook** in your AP English Lit class? YES ____ NO ____

IF YES, (a) Who is (are) the **author**(s) of the text book _____
(b) Which **edition** are you using? _____ edition

39. Do you have a **budget** for your AP English Lit class that you may **spend at your discretion**?
YES ____ NO ____

IF YES, **how much** is your budget for this school year? **$**_____this year for this class

40. Do your students **practice AP exams** (either in whole or in part) in class? YES ___ NO ___

IF YES, roughly how many **class hours** this year will your AP English Lit students spend practicing AP exams?
_____ **class** hours practicing AP exams

41. Do you assign **group projects** requiring that students work together **outside** of class time? YES ____ NO ____

42. Which of the following, if any, do you provide for your AP English Lit class?
Do you provide:

(a) Weekend **group** sessions? YES ____ NO ____
(b) After-school **group** sessions? YES ____ NO ____
(c) Individual tutoring **outside of class**? YES ____ NO ____
(d) College counseling? YES ____ NO ____

43. Please estimate the **percentage of class time** over the year that your AP English Lit students spend in the following activities:

Percentage of Total Class Time Over the Year

—Whole class lecture and discussion _____ percent
—Working in small groups _____ percent
—Working individually _____ percent
Total = 100 percent

44. How, if at all, would your teaching methods differ if you were teaching a **non-AP English Lit class**? _____
_____

We really appreciate your participation in this study. If you have time, would you give us your comments on the following topics?

45. What are the "front burner" issues regarding the AP program in your school or district?

46. What do you see as the problems with AP classes in your school?

47. Other Comments:

Thanks again. Please return the questionnaire in the enclosed, stamped envelope.

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