

# Minority Student Success: The Role of Teachers in Advanced Placement Program<sup>®</sup> (AP<sup>®</sup>) Courses

Nancy W. Burton, Nancy Burgess Whitman,  
Mario Yepes-Baraya, Frederick Cline, and R. Myung-in Kim

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# Abstract

This project described the characteristics and teaching behaviors of those successfully teaching AP<sup>®</sup> Calculus AB and AP English Literature and Composition to underrepresented minority students. Its purpose was to assist educators in improving the participation and performance of underrepresented minority students in AP classes. Study results showed successful teachers of minority students are good teachers for all groups. They express a high opinion of students, both majority and minority, and hold them to high standards. They make sure that students understand and can apply the fundamental concepts in the discipline. They also help students and parents understand and feel comfortable about college.

*Key words:* Advanced Placement Program,<sup>®</sup> effective teaching, teaching minority students, African American students, Hispanic students, academic standards

## I. Background and Rationale

The Advanced Placement Program (AP) is a program with high academic standards that introduces students to a college curriculum and allows them to earn college-level credit while still in high school. It improves students' skills for succeeding in college and confidence in their ability to succeed. Such experiences are valuable to any student planning to attend college, but are of even more importance to students without family experience of college attendance, without "a book culture" at home, among peer groups who do not consider education a promising option for the future, or in schools not emphasizing college preparation.

Students in minority groups traditionally underrepresented in college frequently experience one or more of these barriers to college education. Minority students who are not educationally or economically disadvantaged may encounter stereotyped expectations and treatment, which are themselves barriers. The Advanced Placement Program offers the chance for some students to overcome barriers to college education. The chance is not appropriate for all students, since AP courses are challenging even for well-prepared students. The chance is also not equally available to all students, since roughly half of all high schools offer no AP courses. This study explored some of the characteristics and practices of AP teachers who are effective with minority students with

the long-term goal of opening the AP opportunity to more underrepresented minority students.

Palmaffy (1999) states that "the ultimate measure of teacher quality, of course, is the achievement of their students and the value that a teacher adds," but acknowledges that family and school contexts also influence student learning. The importance of quality teaching is shown by research studies that related teacher characteristics to measures of student achievement (Greenwald, Hedges, and Laine, 1996; Wenglinsky, 2000). It is also demonstrated in surveys of educators' opinions (Clewell, Anderson, Bruschi, Joy, and Meltzer, 1994).

What teachers know and can do is important. Haycock (1998), reporting research conducted in several states where data systems have made it possible to tie teachers to student achievement, found that students with the best prepared teachers make the greatest gains in standardized assessments. Wright, Horn, and Sanders (1997) found that teacher test scores are strongly related to improvements in student test scores over the course of a year. Specific kinds of teacher knowledge were found to be important in several studies: Students learn more from teachers with good basic skills test scores (Ferguson, 1991); teachers with high verbal skills (Ballou and Podgursky, 1997; Ehrenberg and Brewer, 1995); and teachers who have a major or minor in the field they teach (Fetler, 1999; Goldhaber and Brewer, 1999; Monk, 1994; Wenglinsky, 2000). Various studies found that students in low-income communities receive less instruction than their middle-class peers and are more likely to be taught by unqualified or underqualified teachers (National Commission on Teaching and America's Future, 1997; Oakes, 1990; Silver, 1998).

Professional development activities are the principal way of improving existing teachers' subject area and professional knowledge, and recent research has established a connection between teacher professional development and student achievement. Wenglinsky (2000), analyzing National Assessment of Educational Progress data for eighth graders in science and mathematics, found that mathematics teachers who participated in professional development in teaching diverse students and in higher-order thinking skills have substantially higher-achieving students. In science, student achievement is positively related to teachers' professional development in laboratory skills and negatively related to teachers' professional development in classroom management.

A few studies highlighted the effects of classroom teaching practices on student achievement. Wenglinsky (2000) showed that eighth-grade mathematics teachers who use hands-on learning and emphasize higher-order thinking skills in instruction have higher-achieving students. The same study showed that a national sample

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of eighth-grade science students benefited from teachers who use hands-on learning experiences. Confirming these results for math and science, an analysis of the National Educational Longitudinal Study (National Center for Education Statistics, 1996) also found instruction in higher-order thinking important to mathematics achievement but not science achievement. Wenglinsky also showed that mathematics and science teachers who use tests to assess student progress have more successful students.

Duschl and Gitomer (1997) recommend a standards-based, rigorous, and well-articulated curriculum, high performance expectations for all students, and teachers proficient in content and in pedagogy to provide a good education for all students. A number of studies (Angelo, 1996; Barnes, 1981; Brophy, 1979; Brophy and Everston, 1976; Education Trust, 1998; Joyce, Showers, and Rolheiser-Bennett, 1987) point to the importance of teaching to high standards as a cornerstone of effective teaching.

Emphasis on higher-order thinking skills is part of the standards movement. Standards in both language arts and mathematics emphasize critical reading and problem solving (National Council of Teachers of English [NCTE] and International Reading Association [IRA], 1996; National Council of Teachers of Mathematics [NCTM], 1989). The NCTE/IRA standards state that

“[s]tudents’ critical skills are nurtured in classrooms where questioning, brainstorming, hypothesizing, reflecting, and imaging are encouraged and rewarded” (p. 21).

The NCTM standards suggest that rote memorization and practice on lower-level computational skills be replaced with open-ended problems that put emphasis on conceptual understanding through the making and testing of hypotheses and the communication of ideas. Concern about the critical-thinking skills of American students has been reflected in a number of commission reports and policy statements (Bennett, 1988; Marzano, Brandt, Hughes, Jones, Presseisen, Rankin, and Suhor, 1988; National Commission on Excellence in Education, 1983; National Governors’ Association, 1986; Reich, 1989). Large-scale studies such as the National Assessment of Educational Progress (NAEP) and the Third International Mathematics and Science Study (TIMSS) document that most American school children can perform tasks that require routine basic skills, but few can perform tasks that require complex higher-order skills (National Assessment of Educational Progress, 1985, 1991, 1996; Silver, 1998). Although the lack of science and mathematics preparation is more evident among American students enrolled in reg-

ular courses in these subjects, those students enrolled in honors and Advanced Placement mathematics and physical science courses were also found to perform below expectations in TIMSS (Juillerat, Dubowsky, Ridenour, McIntosh, and Caprio, 1997; National Center for Education Statistics, 1998; Center for Science, Mathematics, and Engineering Education, 1999).

A number of authors advocate specific classroom practices that seem likely to be especially effective with minority students. Darling-Hammond (1998) suggests that teachers need training in inquiry to help them consider multiple perspectives and to use this knowledge to reach all students, particularly those with diverse backgrounds. Teachers need to understand subject matter deeply and flexibly so they can help students build on what they already know (Darling-Hammond, 1998; Haycock, 1998). Teachers need to see the connections across fields and to everyday life in order to relate instruction to students’ interests (Darling-Hammond, 1998; Joyce, Showers, and Rolheiser-Bennett, 1987). Raffini (1993) emphasizes finding ways to connect subject matter to students’ lives, providing a human touch by including humor, personal experience, and anecdotes, and delivering information with enthusiasm. Gonder (1991) suggests course planning and assessment activities to match the students’ learning styles. Several studies (Christie and Sabers, 1989; Signer, 1992) suggest that classroom technology such as computer-assisted testing and instruction can increase students’ motivation, self-confidence, and self-discipline, and promote student-student and student-teacher interaction.

McCall (1999) provided an excellent review of research and writings on motivational strategies to use with underachieving students. In defining underachieving students, McCall refers to issues confronting many of today’s underrepresented minority high school students, including drugs, gangs, crime, teen pregnancy, illiteracy, racial prejudice, poverty, and broken homes. Underachieving students, according to McCall, are generally lacking or concealing motivation to be academically successful. Although underachieving students can be of any race or class, many are from minority groups and/or lower-income families. Many also are raised in households in which the parents have not been to college or perhaps not even to high school. Thus, instead of emphasizing the value of education, these parents might encourage their children to get a job and help support the family. To counter this lack of parental involvement in their education, underachieving students frequently need the intervention of a concerned educator to establish academic goals. McCall (1999, p. 422) quotes Jaime Escalante, the famous AP calculus teacher, to make the point:

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“Yes, the barriers disadvantaged or minority students face are substantial, but it is the very possibility of their remaining trapped by them for an entire lifetime which requires that such students be urged to succeed in their academic studies.”

A review of successful programs indicated that the general strategies discussed above should be adapted by teachers both to their teaching styles and their students' learning styles. The Jaime Escalante math program for high school Advanced Placement calculus students (Escalante, 1990), for example, emphasizes high expectations and hard work, a group spirit, strong parent support, and a very high degree of commitment on the part of the teacher and the students. Escalante also engages in relentless recruiting to bring minority students (and their parents) into the AP class. The Kay Toliver mathematics program for junior high school students (Toliver, 1993) is also centered in a caring teacher who holds high expectations. Toliver blends history, culture, literature, writing, and other subjects with the study of mathematics. Student progress is monitored and communicated constantly, and assessment is performance-based. Like Escalante, Toliver relies on parental involvement to the extent of developing lessons that require the attendance of the students' families.

Uri Treisman developed a calculus program for first-year calculus students at Berkeley (Treisman, 1992), just the other side of the college transition from Escalante's. He found that the common assumptions about minority student academic problems do not hold, at least at Berkeley—African American and Hispanic students do *not* lack motivation, academic preparation, family support, or income. His program is based on peer group learning organized around selected problem sets.

“Most visitors to the program thought that the heart of our project was group learning. They were impressed by the enthusiasm of the students....But the real core was the problem sets which drove the group interaction.... [These were] mathematical tasks for the students that not only would help them to crystallize their emerging understanding of the calculus, but that also would show them the beauty of the subject.” (p. 368).

Treisman's purpose is to prepare minority students to major in mathematics and enter the future professorate. He states that one common hypothesis for the lack of minority math and science majors (that minority students lack higher-order thinking skills) is not true of his students. Rather, he suggests that the curriculum has become “so compressed, so devoid of life and spirit, that there was no way to really master the ideas at the level necessary to succeed, let alone become a major”

(p. 370). He believes that potential math and science students get buried in a mass of formulas.

A program at the University of Maryland at College Park to encourage women and minority doctoral students in mathematics addresses the psychological barriers to graduate education in math and science (Kellogg, 2001). Brown and Clewell (1998) found that large, impersonal lectures, extremely demanding coursework and labs, and the fear of falling behind were barriers to minority students' taking mathematics, science, and engineering classes. Both students and professors in the Maryland mathematics department agree that a major reason for their success is the faculty's ability to create an atmosphere of acceptance, support, and inclusion in an otherwise competitive environment. An important benefit of success is that new minority and women prospects can see a group of peers they would feel comfortable with.

From the broader perspective of the professional development of teachers, Villegas (1992) has proposed five competencies for teachers who want to be effective with diverse students:

- to have an attitude of respect for cultural differences, a belief that all students are capable of learning, and a sense of efficacy
- to be familiar with the cultural resources their students bring to class, and aware of the culture of their own classrooms
- to implement an enriched curriculum for all students
- to build bridges between the content and the process of instruction and the cultural backgrounds of students in their classes
- to be aware of cultural differences when evaluating students

The preceding review of literature was used to identify topics that would be appropriate to a questionnaire study of school demographics and policies, and of teacher characteristics and behaviors. Some of the qualities discussed in the review of literature could not be measured via questionnaire. For example, most of the qualities emphasized by Villegas, above, would require classroom observations, in-depth interviews of teachers, and in-depth interviews of students. Other qualities, such as teachers' academic major and minor, frequency and content of professional development experiences, attitudes to students in general and minority students in particular, teaching practices, and AP curriculum emphases could be and were asked about.

Several existing teacher surveys were identified and reviewed for consideration in the development of the school and teacher questionnaires for this study.

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Instruments included the Pacesetter Mathematics Teacher Questionnaire, published in 1996; NAEP School Questionnaire and Teacher Questionnaire, published in 1996 and 1998; AP School Survey for the Study of Underrepresented Minority-Dominant High Schools with Effective AP Programs, developed in 1993; Schools and Staffing Survey developed for a National Center for Education Statistics, published in 1994; the American Federation of Teachers Teachers' View Survey published in 1997; and the U.S. Department of Education Office of Educational Research and Improvement Fast Response Survey System on Teacher Quality, published in 1999. An additional resource used was the AP Course Description books for AP Calculus AB and AP English Literature and Composition.

## II. Design of the Study

### *Sample*

**Subject Areas.** The Advanced Placement Program reports information about the examinations and the students who take them each year. We reviewed the examinations taken by underrepresented minority students, and discovered that those most frequently taken included AP Calculus AB, AP English Literature and Composition, and (for Hispanic students) AP Spanish Language. Since interpretation of performance on AP Spanish Language would be complicated by the birth language of the student, and since it is not a popular choice of African American students, we decided not to include that examination. The other two examinations include many of the minority students taking any AP Examination, and are given in most schools offering AP Examinations.

**Schools.** The Advanced Placement Program keeps information on the number of underrepresented minority students who take each of the AP Examinations in each high school giving AP Examinations. Approximately 400 schools<sup>1</sup> with the most underrepresented minority students taking AP Calculus AB in 1998 were identified and invited to participate in the AP Calculus AB study. The number of AP Calculus AB Examinations taken by underrepresented minority students in these high-minority schools ranged from 6 to 80 per school. The same was done for the 400 schools with the most minority students taking AP English Literature and Composition Examinations. The num-

ber of AP English Literature and Composition Examinations taken by underrepresented minority students ranged from 11 to 81 per school. There was some overlap among schools, so a total of 655 different schools were invited to participate either in the AP Calculus AB study, the AP English Literature and Composition study, or both. The data collection packages were sent to schools in March of 1999, and 200 of the invited schools returned school questionnaire data.

Table 1 describes the schools invited and those that participated. First, we compared the distribution of all schools that give AP Examinations to the subset of high-minority schools invited to participate in this study. By dividing the percent in column two ("Invited") by the percent in column one ("All AP Schools"), we determined what kinds of schools are over- or underrepresented among the high-minority AP schools targeted for this study. The results are nearly identical for Calculus and Literature. The second to last column in Table 1 averages the ratios for the two subjects. Categories with a ratio above 1.5 are considered overrepresented; categories below .5 are considered underrepresented.

Compared to the total population of over 9,000 schools giving AP Calculus AB or AP English Literature and Composition Examinations, Table 1 shows that there are fewer high-minority AP schools in the Midwestern and New England regions, more high-minority AP schools in the Southern, Southwestern, and Western regions, and about average representation in the Middle Atlantic states. The high-minority AP schools are three times as likely to be located in large cities (roughly 60 percent of the invited sample as compared to 20 percent of the total population of schools giving AP Examinations). Towns and rural areas are underrepresented; medium cities and suburbs are proportionally represented. Among the high-minority AP schools, "all other" schools, including independent schools, non-Catholic religious schools, charter schools, and home schools, are underrepresented. Public schools and Catholic schools are proportionally represented. Finally, the high-minority AP schools, averaging about 350 seniors, are larger than the total population of AP schools (averaging 217 seniors). Thus a typical high-minority AP school is a large school in a large city in the South, Southwest, or West.

Next, we compared the *invited* schools to the *participating*<sup>2</sup> schools, to determine how well the study represents the desired population. For that comparison, the percent participating was divided by the percent invited. Again, results for the two subjects were very close, so the average ratio, given in the last column of the table, is

<sup>1</sup> A total of 442 institutions were on the invitation list, but some of these were districts and therefore not eligible to participate.

<sup>2</sup> Participating schools were defined as those who returned enough data to be analyzed—those with a school questionnaire, a teacher questionnaire, and student test scores and grades.

TABLE 1

**Comparing Schools Invited to Participate and Schools Participating  
in this Study to All AP Schools in Two Subjects**

Number	AP Calculus AB					AP English Language and Literature					Average	
	All AP Schools	Invited	Comp. (I/A)	Partic.	Comp. (P/I)	All AP Schools	Invited	Comp. (I/A)	Partic.	Comp. (P/I)	Comp. (I/A)	Comp. (P/I)
	9,139	442	—	129	—	9,603	400	—	101	—	—	—
<i>CB Region</i>												
Middle States	20%	23%	1.15	20%	0.87	20%	18%	0.90	23%	1.27	1.02	1.07
Midwest	24%	8%	0.33	8%	1.00	21%	8%	0.38	8%	1.00	0.36	1.00
New England	8%	1%	0.12	1%	1.00	8%	1%	0.12	—	—	0.12	0.50
South	21%	30%	1.43	37%	1.23	22%	33%	1.50	31%	0.94	1.46	1.08
Southwest	9%	11%	1.22	16%	1.45	11%	20%	1.82	22%	1.10	1.52	1.28
West	18%	27%	1.50	19%	0.70	18%	18%	1.00	17%	1.00	1.25	0.85
<i>Location</i>												
Large City	19%	58%	3.05	58%	1.00	19%	53%	2.79	59%	1.11	2.92	1.06
Medium City	14%	12%	0.86	11%	0.92	13%	14%	1.07	12%	0.86	0.96	0.89
Town	24%	9%	0.38	14%	1.55	25%	11%	0.44	4%	0.36	0.41	0.96
Suburb	27%	16%	0.59	15%	0.94	26%	16%	0.62	16%	1.00	0.60	0.97
Rural	16%	3%	0.19	2%	0.67	17%	6%	0.35	9%	1.50	0.27	1.08
<i>Type of School</i>												
Public	79%	87%	1.10	87%	1.00	79%	87%	1.10	85%	0.98	1.10	0.99
Catholic	8%	9%	1.12	11%	1.22	9%	8%	0.89	12%	1.50	1.00	1.36
All other	13%	4%	0.31	2%	0.50	12%	5%	0.42	3%	0.60	0.36	0.55
Sr. Class Size	217	361	—	366	—	213	328	—	342	—	—	—
Mean (SD)	(154)	(195)		(192)		(153)	(195)		(209)			

NOTE: I/A=the ratio of Invited schools to All schools; P/I=the ratio of Participating schools to Invited schools.

discussed. The 129 participating AP Calculus AB schools and the 101 participating AP English Literature and Composition schools appear to represent the total invited group well in their regional distribution, type of community, type of school control, and senior class size. There may be slight overrepresentation of schools in the Southwest (ratio=1.28) and Catholic schools (ratio=1.36), which is actually an advantage, since both categories have high numbers of Mexican American or Puerto Rican students, the most severely underrepresented minority group in the study. The two categories with low representation in the study—schools in the New England region, and schools that are neither public nor Catholic—are very small categories that can be expected to have very few minority students. In summary, the participating schools are roughly representative of the invited schools in region, location, and type of school. Their representation of other qualities of the invited schools is unknown. Given that fewer than one-third of the invited schools participated, one should be cautious in generalizing the results to the original intended population.

**Students.** The student groups traditionally underrepresented in Advanced Placement classes include African American, American Indian and Alaskan Native, Mexican American, Puerto Rican, and at least some of the students in the “other Hispanic” group.

The American Indian and Alaskan Native group, representing less than 1 percent of the test-taking population (Advanced Placement Program, 1998), is too small to include in the study and too unique to combine with other minority groups. We judged that the “other Hispanic” group is also too diverse, culturally, economically, linguistically, and educationally to produce interpretable results. Finally, the Mexican American and Puerto Rican groups, which are also too small to study by themselves, were combined. They share a common language background, related histories of discrimination in the Anglo society, and a general similarity of distribution of economic advantage/disadvantage, although there are numerous cultural and historical differences. Thus the two target underrepresented minority groups included in the study were African American students and a combined group of Mexican American and Puerto Rican students. In order to be more certain that the teachers identified as successful with the target minority students reliably succeed year after year, we collected data on their AP students in the 1996-97, 1997-98, and 1998-99 school years.

We will refer to these groups as “minority students,” but that classification should be considered to actually include *underrepresented minority groups large enough to study*.

Tables 2 and 3 give numbers and percents of all the students included in this study, and of the subsets of students whose teachers were identified as more and less effective in teaching minority students. Numbers and percents are also given by gender and ethnic group. Percents for males and females are computed for each specific ethnic group. Percents for ethnic groups sum to approximately 100<sup>3</sup> in each column. Table 2 documents the sample for AP Calculus AB students, and Table 3 for

AP English Literature and Composition students.

Table 2 shows that 18 percent of the AP Calculus AB students included in the study are African American, 9 percent Mexican American/Puerto Rican, 35 percent white, and 38 percent “All Other.”<sup>4</sup> In contrast, the principals reported that the overall senior classes in participating schools are 35 percent African American, 35 percent Hispanic, 23 percent white, and 7 percent other (see Table 8). Despite the fact that these

TABLE 2

**AP Calculus AB Students Participating in the Study: Numbers and Percents\* by Ethnic Group\*\* and Gender**

		Students of More and Less Effective Teachers									
		Numbers				Percents					
		All Participants		More Effective		Less Effective		More Effective		Less Effective	
Ethnic Group	Gender			AA	M&P	AA	M&P	AA	M&P	AA	M&P
<i>African American</i>											
	Female	877	63.7%	297	76	216	103	68.8%	65.5%	56.5%	62.4%
	Male	496	36.0%	135	40	165	62	31.3%	34.5%	43.2%	37.6%
	Total	1,376	17.8%	432	116	382	165	20.2%	7.1%	30.8%	13.9%
<i>Mexican American &amp; Puerto Rican</i>											
	Overall										
	Female	380	53.1%	23	79	55	155	54.8%	45.4%	49.1%	57.4%
	Male	336	46.9%	19	95	57	115	45.2%	54.6%	50.9%	42.6%
	Total	716	9.3%	42	174	112	270	2.0%	10.7%	9.0%	22.7%
	Best Language: English										
	Female	170	51.7%	13	45	31	66	50.0%	46.4%	46.3%	59.5%
	Male	159	48.3%	13	52	36	45	50.0%	53.6%	53.7%	40.5%
	Total	329	4.3%	26	97	67	111	1.2%	6.0%	5.4%	9.4%
	Best Language: Bilingual										
	Female	134	53.0%	5	23	17	61	50.0%	47.9%	58.6%	52.1%
	Male	119	47.0%	5	25	12	56	50.0%	52.1%	41.4%	47.9%
	Total	253	3.3%	10	48	29	117	0.5%	3.0%	2.3%	9.9%
<i>White</i>											
	Female	1,206	44.5%	455	244	186	192	46.8%	42.1%	43.3%	44.8%
	Male	1,491	55.0%	516	335	244	237	53.1%	57.8%	56.7%	55.2%
	Total	2,710	35.1%	972	580	430	429	45.4%	35.7%	34.6%	36.1%
<i>All Other</i>											
	Female	1,470	50.5%	363	380	151	174	52.2%	50.3%	47.6%	53.9%
	Male	1,375	47.2%	297	345	166	147	42.7%	45.7%	52.4%	45.5%
	Total	2,912	37.7%	696	755	317	323	32.5%	46.5%	25.5%	27.2%
<i>Total</i>											
	Female	3,933	51.0%	1,138	779	608	624	53.1%	47.9%	49.0%	52.6%
	Male	3,698	47.9%	967	815	632	561	45.1%	50.2%	50.9%	47.3%
	Total	7,714	100.0%	2,142	1,625	1,241	1,187	27.8%	21.1%	16.1%	15.4%
<i>Number of Teachers</i>		129		35	25	34	25				
Average Number of Students per Teacher	Female	30.5		32.5	31.2	17.9	25.0				
	Male	28.7		27.6	32.6	18.6	22.4				
	Total	59.8		61.2	65.0	36.5	47.5				

\*Percents may not add to 100 because of missing data.

\*\*AA=African American; M&P=Mexican American and Puerto Rican.

<sup>3</sup> Results may not sum to 100 because of nonresponse to the gender or ethnic questions.

<sup>4</sup> The “All Other” category includes Asian American students, Other Hispanic (Cuban, Latino, and South American) students, American Indian students, students who identified themselves as “other,” and those who did not specify their race/ethnicity.

TABLE 3

**AP English Literature and Composition Students Participating in the Study:  
Numbers and Percents\* by Ethnic Group\*\* and Gender**

				Students of More and Less Effective Teachers							
				Numbers				Percents			
				More Effective		Less Effective		More Effective		Less Effective	
Ethnic Group	Gender	All Participants		AA	M&P	AA	M&P	AA	M&P	AA	M&P
<i>African American</i>											
	Female	1,041	72.4%	148	87	385	177	71.8%	72.5%	70.6%	63.9%
	Male	380	26.4%	43	32	160	99	20.9%	26.7%	29.4%	35.7%
	Total	1,438	21.8%	206	120	545	277	12.6%	8.8%	49.9%	30.7%
<i>Mexican American &amp; Puerto Rican</i>											
	<i>Overall</i>										
	Female	380	60.9%	78	74	58	62	54.2%	55.6%	58.0%	47.0%
	Male	243	38.9%	65	59	42	70	45.1%	44.4%	42.0%	53.0%
	Total	624	9.4%	144	133	100	132	8.8%	9.8%	9.1%	14.6%
	<i>Best Language: English</i>										
	Female	172	56.0%	35	44	30	30	45.5%	50.6%	55.6%	42.3%
	Male	135	44.0%	42	43	24	41	54.5%	49.4%	44.4%	57.7%
	Total	307	4.6%	77	87	54	71	4.7%	6.4%	4.9%	7.9%
	<i>Best Language: Bilingual</i>										
	Female	137	65.6%	31	16	23	31	73.8%	69.6%	65.7%	56.4%
	Male	72	34.4%	11	7	12	24	26.2%	30.4%	34.3%	43.6%
	Total	209	3.2%	42	23	35	55	2.6%	1.7%	3.2%	6.1%
<i>White</i>											
	Female	1,453	62.1%	350	274	141	161	61.0%	59.8%	62.1%	47.1%
	Male	775	33.1%	206	160	86	181	35.9%	34.9%	37.9%	52.9%
	Total	2,339	35.4%	574	458	227	342	35.2%	33.8%	20.8%	37.9%
<i>All Other</i>											
	Female	1,303	59.1%	383	357	128	69	54.3%	55.3%	57.9%	45.7%
	Male	845	38.3%	285	243	93	82	40.4%	37.6%	42.1%	54.3%
	Total	2,204	33.4%	705	646	221	151	43.3%	47.6%	20.2%	16.7%
<i>Total</i>											
	Female	4,177	63.2%	959	792	712	469	58.9%	58.4%	65.1%	52.0%
	Male	2,243	34.0%	599	494	381	432	36.8%	36.4%	34.9%	47.9%
	Total	6,605	100.0%	1,629	1,357	1,093	902	24.7%	20.5%	16.5%	13.7%
<i>Number of Teachers</i>		101		34	22	33	21				
Average Number of Students per Teacher	Female	41.4		28.2	36.0	21.6	22.3				
	Male	22.2		17.6	22.5	11.5	20.6				
	Total	65.4		47.9	61.7	33.1	43.0				

\*Percents may not add to 100 because of missing data.

\*\*AA=African American; M&P=Mexican American and Puerto Rican.

ethnic/racial definitions are not quite comparable<sup>5</sup>, it is clear that ethnic/racial group is related to AP enrollment. Both African American and Mexican American/Puerto Rican students enroll about half as much as one would expect if ethnic/racial group were unrelated to AP participation; white students enroll about one and a half times more than would be expected; and Asian American students enroll at an even higher rate.

Table 2 also shows the percentage of young women AP Calculus AB students participating in the study by

ethnic group and overall. The national AP Program reports slightly fewer young women AP Calculus AB test-takers than this study—47 percent versus 51 percent. While the difference of four percentage points is hardly important, the reason for the difference is of interest. It is clearly because of the gender distribution for minority students. Sixty-four percent of African American students, 53 percent of Mexican American/Puerto Rican students, and 50 percent of all other students in this study are young women. Only 45 percent of white students in

<sup>5</sup> Principals were asked to report on all Hispanic students combined. Later, the research team decided that the target minority group should include only Mexican American and Puerto Rican students.

the study are young women, comparable to 46 percent women among all white AP Calculus AB test-takers in the national Advanced Placement Program (1998).

The bottom panel of Table 2 divides the total number of students by the total number of teachers to arrive at an average number of students per teacher. This is not the same as class size, since we do not know how many AP classes each teacher takes. Overall, the AP Calculus AB teachers participating in this study had an average 60 AP Calculus AB students over the three years studied (an average of 20 AP students per year).

Table 3 shows the ethnic group and gender of all AP English Literature and Composition students participating in the study, and the students of teachers identified as more and less effective in teaching minority students. Approximately 6,600 students were included in the study: 22 percent are African American, 9 percent are Mexican American/Puerto Rican, 35 percent are white, and 33 percent are classified as “All Other.” This is basically the same distribution as for AP Calculus AB—slightly more African American students and slightly fewer other. As was the case for AP Calculus AB, African American and Mexican American/Puerto Rican students are underrepresented and white and other students are overrepresented in AP classes compared to the overall population of participating schools.

The gender representation in this sample is similar to that of the total AP population in the subject. Sixty-three percent of the participants are young women, comparable to the 64 percent reported by the Program for all AP English Literature and Composition Examination takers (Advanced Placement Program, 1998). The percentage of young women study participants is somewhat higher for African American students (72 percent).

The number of students per teacher is similar in AP English Literature and Composition (Table 3) and in AP Calculus AB (Table 2). Overall, AP English Literature and Composition teachers had an average of 22 Literature students per year over the three years included in the study.

Finally, we can ask how many students have more effective teachers.<sup>6</sup> Table 4 gives a brief summary of the pertinent numbers. It shows that the more effective teachers have many more students than the less effective teachers. Thus the more effective teachers of minority students have a chance to affect more students overall.

Are the more effective teachers also more likely to teach students in the target minority groups? This question is not quite so clearly answered. Table 4 shows that in total, the more effective teachers actually have *fewer* target minority students. Even though this finding did not hold up in all categories, overall both African

TABLE 4

**Summary of AP Program Size for More and Less Effective Teachers**

	<i>More Effective</i>		<i>Less Effective</i>	
	AA	M&P	AA	M&P
<i>All Students</i>				
Calculus	2,142	1,625	1,241	1,187
Literature	1,629	1,357	1,093	902
<i>Total for All Students</i>	3,771	2,982	2,334	2,089
<i>Target Minority Students</i>				
Calculus	432	174	382	270
Literature	206	133	545	132
<i>Total for Target Minority Students</i>	638	307	927	402

American and Mexican American and Puerto Rican students in this study have less chance of having an AP teacher identified as more effective in teaching students in their ethnic group than of having a teacher identified as less effective in teaching students in their ethnic group. Because the more effective teachers tend to have larger numbers of students, the target minority students on average are a relatively small percentage of the students in their classes. For example, Calculus teachers identified as more successful in teaching African American students average 20 percent (482/2,142) African American students in their AP classes, while the less successful teachers average 31 percent (382/1,241). In brief, target minority students are somewhat more likely to have a teacher identified as *less* successful with their group than a teacher identified as more successful. In addition, target minority students are likely to be a minority in successful teachers’ classes.

## Data

**School questionnaire.** Principals were asked about the general economic and educational background of students and parents in the school, and about school, district, and state policies and practices for an AP program. These data were collected to identify conditions that might affect the success of minority students but were beyond the teacher’s control. These might include policies set by the principal or district about student qualifications for taking AP classes that could cause differences in the level of preparation of AP students. Or the state or district or school could have a well-established AP program with very strong preparation for Pre-AP™ students, again causing differences among schools in the level of preparation of students enrolling in AP classes. The questionnaires also covered policies and practices for assigning teachers to teach AP classes. See the Appendix for a copy of the school questionnaire.

<sup>6</sup> The method of selecting more and less successful teachers is described in detail later in this report.

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**Teacher's questionnaire.** The teacher's questionnaire repeated some of the same questions given on the school questionnaire, to get the teacher's perspective on the school policies and practices for its AP program and for the general educational and economic background of the students. In addition, questions were asked about the teacher's educational background and professional development, goals for the AP classes, and practices in recruiting for and teaching the AP class. The purpose was to identify characteristics and behaviors of teachers that might be related to success in teaching underrepresented minority students. See the Appendix for copies of the teacher questionnaires.

**Student data.** AP grades were extracted from ETS files. PSAT/NMSQT® score files were also matched to AP score files. Because the Advanced Placement Program does not ask students to name their AP teachers, it was necessary to collect class lists from each AP teacher studied. This was also an opportunity to collect some information about students who took the AP class but did not take the AP Examination. In order to judge the achievement of students who did not take the AP Examination compared to those who did, we asked teachers to supply information for all AP students about the teacher-assigned class grade and whether or not students enrolled in college (not available for 1999 test-takers at the time the data were collected).

**Focus group data.** A total of 101 AP English Literature and Composition teachers and 129 AP Calculus AB teachers had sufficient data that we could compute their level of success with the target minority students. Because these numbers were somewhat smaller than originally anticipated, there were not enough teachers in any location except New York City to hold conventional focus groups. One focus group of AP English Literature and Composition teachers (N = 9) and one group of AP Calculus AB teachers (N = 3) were held in Manhattan in February 2000. In addition, a national online focus group in a bulletin board format was also conducted. Teachers were invited to participate for three days in an e-mail exchange; six Calculus teachers and one Literature teacher participated. Each day, the facilitator would pose several questions and might pose some follow-up questions. Participants agreed to log on to the bulletin board at least once each day, and to respond to the questions posed by the facilitator and to the answers posted by other participants. They could also go back to other days' discussions.

The purpose of all the focus groups was to obtain detailed information about recruiting, teaching, and personal interaction techniques that do and do not work with underrepresented minority students, and

information about any differences among subgroups of students. The teachers also used the focus groups as a chance to discuss materials, teaching techniques, content, and common issues.

## *Data Analysis*

The research team developed four measures of success for teachers—success in (1) enrolling or (2) teaching African American students, and success in (3) enrolling or (4) teaching Mexican American or Puerto Rican students. These four success measures attempted to take into account existing conditions not under the control of the AP teacher. For the success in enrolling measure, we controlled for the number of seniors attending the high school in the target minority group. For the success in teaching measure, we controlled for the initial PSAT/NMSQT verbal and mathematical reasoning skills of the target minority students. The purpose of the statistical adjustments was to make the AP teachers more comparable before deciding how successful they were. We then describe various characteristics that seem to distinguish more successful teachers from less successful teachers—characteristics of their schools, their students, their academic training, or their teaching practices.

## III. Indicators of Success

### *Enrolling Minority Students*

Before one can succeed in teaching minority students, the students must enroll in class. In general, the students who take an AP class do not represent the national population of minority students in their age group. There are only about one-third as many African American and Hispanic students in the AP Program as one would expect based on their frequency in the population ages 15 to 19 (each group is approximately 15 percent of the age cohort but only 5 percent of AP takers). On the other hand, Asian American students are represented at a higher rate in AP than in their age cohort. In AP Calculus AB, for example, Asian Americans are 15 percent of test-takers as compared to 4 percent of the age cohort. (Figures for minority representation in AP are found in Advanced Placement Program, 1998; figures for the national cohort age 15–19 in U.S. Census Bureau, 2000).

In the schools sampled for their high numbers of underrepresented minority students taking the AP Examination

TABLE 5

## Ethnic/Racial Breakdown of Students and Teachers

Ethnic Group	National Comparisons			Students in Study			Teachers in Study	
	Census Ages 15–19*	National AP Pop.**		All Seniors in School***	AP Takers****		All teachers in school***	AP teachers ***
		Calc AB	Eng Lit		Calc AB	Eng Lit		
African American	15%	4%	5%	35%	18%	22%	19%	11%
Hispanic	14%	5%	6%	35%	9%	10%	15%	12%
White	66%	67%	70%	23%	35%	35%	60%	70%
All other	5%	24%	19%	7%	38%	33%	6%	7%

\*U.S. Census Bureau (2000). \*\* AP Program (1998). \*\*\*Based on school questionnaire responses by 200 principals. \*\*\*\*Based on sample of students in study. See Table 3 for Ns.

in Calculus AB or English Literature and Composition, we were successful in finding schools with a high proportion of African American and Hispanic students: on average, each group represents 35 percent of the seniors in participating schools. Even in schools chosen for a high proportion of minority students taking AP Examinations, however, the proportion of minority students in AP classes does not reflect the proportion of minority students in the school. Table 5 shows that roughly 60 percent as many African American students and 30 percent as many Hispanic students participate in an AP course as one would expect based on their representation in the schools<sup>7</sup>.

Minority group teachers are also not in proportion to the student populations at the participating schools. For example, though African American students are 35 percent of the student population, 19 percent of all teachers and 11 percent of all AP teachers in the participating schools are African American. Although our results show higher minority representation, the relative scarcity of minority teachers reflects national trends, which show that 36 percent of the nation's student population, but only 13 percent of teachers, are minorities (Dozier and Bertotti, 2000).

Not all of these schools and teachers make a special effort to recruit minority students for their Advanced Placement program. Table 6 shows that about half of the principals reported making an effort to let minority students know about AP courses or to recruit minority students to take AP courses. Even fewer teachers—about 20 percent of AP Calculus AB teachers and 30 percent of Literature teachers—reported making an effort to recruit students in the target minority groups.

Minority students who lack a family academic tradition, often in high schools with inadequate counseling, may be very late in discovering their academic talent. The thought of taking an AP course may not even enter their

minds. AP teachers appear to be of critical importance in discovering and encouraging academically talented minority students. An earlier study of high minority schools with a high proportion of students earning a 3 or better on the AP Examination (Coley and Casserly, 1992), asked students about important educational influences. Seventy percent of the students mentioned an elementary school teacher and 75 percent mentioned a middle school or high school teacher. The next highest influences were mentioned by 26 percent or fewer of the students studied.

Because the teacher's influence is so important, the research team originally proposed to make simple minority student *presence* in an AP course, independent of their *performance* in an AP course, one of the indicators of teacher success. In the end, the research team decided not to include the results on success in enrolling minority students in this report because the results for those indicators were not interpretable. In addition, other data suggested that success in enrolling minority students may not be a result of teacher behaviors. Focus group results showed that teachers do not consider recruiting to be their job. Questionnaire results agreed that teachers do little recruiting of minority students. Because we were unsuccessful in developing an indicator of success in attracting minority students to Advanced Placement classes, that aspect of the original study design was dropped.

TABLE 6

## Special Efforts for Minority Students

	Principal	Calculus Teacher	Literature Teacher
N	200	129	101
Make students aware of AP	44%	21%	30%
Make parents aware of AP	34%	–	–
Attract students to AP	46%	20%	28%
Use special methods to select for AP	–	6%	8%

<sup>7</sup> Note that principals were asked about the number of Hispanic seniors, while only Mexican American and Puerto Rican students were in the target group. Thus, the 30 percent representation rate of Hispanic students is an underestimate. The proportion was calculated by comparing the percent target minority in AP classes versus the percent in the total school population. Thus the 60 percent participation by African American students was computed by dividing the average percent African American students in the two AP subjects being studied [ $18$  (percent in Calculus) +  $22$  (percent in Literature)/ $2$ ] by  $35$  (the overall percent of African American students in the participating schools); the result (57 percent) was rounded to the nearest 10 percent.

## Teaching AP<sup>®</sup> Courses to Minority Students

Probably the most important indicator of success for teachers is their students' achievement in the subject area (Palmaffy, 1999). The Advanced Placement Program is well designed for determining student achievement, since it includes both an assessment professionally designed to assess the specific Advanced Placement curriculum and extensive teacher professional development keyed to the curriculum and the examination. Results of the examination alone are not enough, however, to determine teacher effectiveness. In the first place, not all students take the examination. Nationally, 60 percent of AP students took the examination in 1998 (Advanced Placement Program, January 2000). Because less successful AP students are less likely to take the examination, average examination grades for a teacher can be expected to overestimate the whole class's achievement. Moreover, examination policies vary. Some states, districts, and schools pay for all students to take the examination; some base payment on student need; some have a policy that all students must take the examination; some leave the decision (and the payment) to students; others discourage students unlikely to attain a grade of 3 or better from taking the examination; some use examination results to evaluate the AP teacher (Curry, 2000a).

A second difficulty in using AP Examination grades as an indicator of teacher effectiveness is that students come into their AP classes with different levels of prior preparation. In some schools, AP is considered an elite program in which only the finest students participate. In these schools, some students might be able to earn a 3 on the AP Examination before taking the class. In other schools, students are encouraged to stretch themselves by taking a college-level course even though they are very unlikely to earn a high enough examination grade to receive college credit. Principals and teachers were asked about policies and practices for the AP course and examination, and PSAT/NMSQT scores were gathered for participating students to use as a control for their general educational background prior to enrolling in AP courses. The following sections describe the analysis of AP examination-taking policies and practices and the analyses of PSAT/NMSQT scores for participating students.

**AP Examination policies and practices.** The AP Examination practices in the sampled schools are described in Table 7. Fewer than one principal in five reported encouraging students to take the AP

TABLE 7

### Practices and Goals Related to the AP Examination As Reported by Principals, Calculus Teachers, and Literature Teachers

Question	Principal	Calculus Teacher	Literature Teacher
N	200	129	101
<i>Practices regarding students taking the AP Examination</i>			
Encourage students likely to get a 3 or higher	17%	14%	9%
Leave decision to the student	23%	23%	29%
All students take the exam	52%	57%	55%
Other	8%	6%	7%
<i>Goals for AP students (average rating: 1 = low; 5 = high)</i>			
Earn a grade of 3 or higher	3.8	3.9	3.7
Experience college-level work	4.4	4.5	4.8
Build confidence in subject	4.4	4.5	4.7
Build interest in subject	4.2	4.2	4.4
Improve chances of college admission	4.4	3.9	4.0
Gain confidence in college success	4.4	4.4	4.6
<i>School, district, or state pays AP Examination fees</i>			
No	25%	—	—
All fees paid	37%	—	—
Fees paid for low-income students	29%	—	—
Other	9%	—	—

Examination based on their projected grade, and an even smaller proportion of teachers reported that policy. Over half of principals and teachers reported that all students take the AP Examination. Two-thirds of the principals reported that the school, district, or state pays AP Examination fees at least for low-income students<sup>8</sup>; one-third of principals reported that AP Examination fees are paid for all students. In addition, two-thirds of the participating schools reported applying for and being charged reduced fees by the College Board for their low-income students.

A look at the AP goals reported by principals and teachers (Table 7) shows that the least important goal for all groups participating in this study is that students earn a grade of 3 or higher on the AP Examination. In contrast, a contemporary study of *new* AP teachers (Burton, Edelstein, Kindig, Bruschi, and Cline, in preparation) found that a passing grade on the AP Examination is the highest priority for new AP Biology and U.S. History teachers and the third highest goal for new Calculus AB teachers. Teachers in the present study differed from them in two principal ways—they have a median of four years teaching AP courses, and they have a high proportion of minority students. For them, scoring well on the AP Examination is an important goal, rated about four on a

<sup>8</sup> This finding implies that one-third of the principals studied were unaware that under federal grants *all* states pay the AP Examination fees for *all* low-income students.

scale from one to five, but other goals are more important. To the more experienced teachers of minority students in the present study, the most important goals are that the students experience college-level work, build their confidence in the subject, and build their confidence of success in college. These goals are also of top importance to their principals. The principals added a fourth goal of equal importance, that of improving the students' chances of admission to college. This general goal is of less importance to teachers. In general, the principals and teachers share high aspirations for their AP classes, and are in agreement about the importance of their goals.

Despite the fact that half of the sampled schools reported that their practice is to have all students take the AP Examination, the research team was concerned that minority students might be especially likely not to take the examination. This is because the average minority student is likely to be less wealthy than the average white student, and also to have less academic preparation for AP classes. For that reason, we collected rosters of all students who took the AP course in 1997, 1998, and 1999 from the AP teachers participating in this study. Table 8 reports the number and percent of students who took the AP Examination in Calculus AB and English Literature and Composition. On the average, over 80 percent of all students enrolled in the participating classes took the AP Examination—substantially higher than the 60 percent participation reported by the AP Program overall (Advanced Placement Program, January 2000)<sup>9</sup>.

Table 8 shows no patterns of differential ethnic group participation in the AP Examination. Because

such a high proportion of all students had AP Examination grades, the research team decided not to analyze either teacher-assigned class grades or the report of college enrollment as alternate measures of achievement. Teacher grades are difficult to interpret since teachers' grading standards differ, and college enrollment was not a promising variable since virtually all AP students were reported as enrolled in college.

**Using the PSAT/NMSQT to predict AP Examination grades.** Beside the possibility of differential participation in the AP Examination, the major interpretive problem in the study was how to take into account differences in the level of prior preparation of students who take AP courses. Though an achievement pretest was not available for the students sampled in the study, a very large proportion of college-bound students take the Preliminary SAT (the PSAT/NMSQT) in October of their junior year. The PSAT/NMSQT allows one to estimate the overall educational background of students—the critical reading and problem-solving skills developed over time both in and out of school. Using PSAT/NMSQT scores to predict AP grades will allow a control on the student's general educational background to be developed. By basing the prediction on target minority students from the target population of high-minority schools, we ensured that the background controlled is relevant to the students in this study. By taking the difference between a student's AP Examination grade as predicted by the PSAT/NMSQT and the actual AP Examination grade, we subtracted out the student's relevant educational background. Controlling on the

TABLE 8

**Students Who Took AP Examinations and PSAT/NMSQT<sup>®</sup> Tests**

<i>Ethnic Group</i>	<i>Total Sample</i>	<i>N with AP Scores</i>	<i>% with AP Scores</i>	<i>N with AP and PSAT/NMSQT</i>	<i>% with AP and PSAT/NMSQT</i>
<i>AP Calculus AB Students</i>					
African American	1,376	1,121	81%	811	59%
Mexican American and Puerto Rican	716	646	90%	388	54%
White	2,710	2,339	86%	1,521	56%
All Other	2,912	2,372	81%	1,476	51%
<b>Total</b>	<b>7,714</b>	<b>6,478</b>	<b>84%</b>	<b>4,196</b>	<b>54%</b>
<i>AP English Literature and Composition Students</i>					
African American	1,438	1,189	83%	751	52%
Mexican American and Puerto Rican	624	548	88%	336	54%
White	2,339	1,850	79%	1,443	62%
All Other	2,204	1,868	85%	1,331	60%
<b>Total</b>	<b>6,605</b>	<b>5,455</b>	<b>83%</b>	<b>3,861</b>	<b>58%</b>

<sup>9</sup> The research team was surprised that the proportion taking the AP Examination was so high. This high rate may have several causes. A high proportion of participating schools did report that all of their students take the AP Examination. In the West and in Texas, states help pay AP Examination fees. Since many high-minority schools are found in these locations, state policies may partly explain the observed exam participation rates. Furthermore, obtaining a high score on the AP Examination is a relatively low priority among principals and teachers in these schools, making them more willing to encourage even marginal students to take the exam. However, the high proportion may also be in part due to missing data. That is, schools had to provide all information on students who did not take the examination. It is likely that at least some of the schools failed to provide that information.

PSAT/NMSQT did not, of course, remove differences in students' specific subject area preparation, motivation, and interests because these traits are not measured by the PSAT/NMSQT, but it did improve comparability.

Students who took the AP Examination in the spring of their senior year and the PSAT/NMSQT in the fall of their junior year were identified. This is the most common pattern for taking the examinations; this pattern also guaranteed that the PSAT/NMSQT score was earned prior to the AP class. (It is important to control only on the educational background of students before they take the course; one would not want to adjust away gains in reasoning skill obtained from AP instruction.) More than half of the AP test-takers in our sample had taken the PSAT/NMSQT and the AP Examination in the required pattern<sup>10</sup>. Table 8 shows the total sample of students included in the study by subject area and ethnic group, and the number and percent of these students who had the appropriate pattern of AP and PSAT/NMSQT scores. While there are some variations, there is little pattern of difference by subject area or ethnic group.

PSAT/NMSQT verbal and mathematical scores were used to predict AP grades. Separate multiple regression equations were developed for:

- African American students in AP Calculus AB
- Mexican American and Puerto Rican students in AP Calculus AB

- African American students in AP English Literature and Composition
- Mexican American and Puerto Rican students in AP English Literature and Composition

Equations were computed separately by ethnic group and subject for all students in the invited schools in each of the three years. In addition, comparison equations were computed for all white and Asian American students. All students in the invited schools with the required pattern of PSAT/NMSQT scores and AP grades were used to compute the multiple regression equations so that the equations would represent the performance of the entire intended population as well as possible; the regression equations based on the total groups were then used to predict AP grades for the participating sample. Table 9 displays numbers and correlations by subject, year, and ethnic group. Correlations with AP grades are given for the PSAT/NMSQT verbal measure alone, the PSAT/NMSQT mathematical measure alone, and for the combination of verbal and math.

Both AP subjects show similar patterns of correlations over years and ethnic groups. As would be expected, the verbal test is a better predictor of the AP English Literature and Composition Examination grade and the mathematical test is a better predictor of the AP Calculus AB Examination grade. In fact, the correlation for the combination of verbal and math is virtually equal to the correlation for the single best predictor.

TABLE 9

**Predicting AP Grades from PSAT/NMSQT Scores in Schools Giving the Most AP Examinations to Underrepresented Minority Students\***

Ethnic Group	1997				1998				1999			
	N	V	M	V+M	N	V	M	V+M	N	V	M	V+M
<i>AP Calculus AB Students</i>												
African American	794	.37	.51	.52	1,120	.40	.53	.54	1,147	.42	.57	.58
Mexican American and Puerto Rican	565	.34	.47	.48	807	.40	.50	.51	952	.39	.49	.50
Asian American	1,085	.31	.57	.57	1,177	.44	.58	.58	1,528	.39	.56	.57
White	1,936	.37	.48	.49	2,004	.39	.54	.56	2,635	.34	.49	.49
<i>AP English Literature and Composition Students</i>												
African American	1,354	.69	.53	.70	1,724	.70	.52	.70	2,096	.65	.50	.66
Mexican American and Puerto Rican	1,017	.69	.52	.70	1,390	.69	.52	.69	1,808	.70	.51	.70
Asian American	1,020	.74	.51	.75	1,120	.69	.49	.69	1,440	.70	.53	.71
White	2,915	.68	.46	.69	3,218	.67	.46	.67	4,043	.65	.42	.66

\* This table is based on all test-takers in the schools invited to participate, not just on participating schools. In other words, these correlations represent the entire population of interest for this study.

<sup>10</sup> Camara and Millsap (1998) found PSAT/NMSQT scores for 70 percent of AP takers in a match of all test-takers (including sophomores, juniors, and seniors) from 1993-94 and 1994-95 for both examinations. Approximately 700,000 students had taken both examinations; this constitutes about 20 percent of all PSAT/NMSQT takers, but over 70 percent of all AP takers in the two years (College Board, 2000). Our 54 to 58 percent match rate was found for high-minority schools, and only included those students who took the PSAT/NMSQT as juniors and subsequently took the AP Examination as seniors.

Overall, the AP English Literature and Composition grade is better predicted (with correlations of approximately .7) than the AP Calculus AB grade (correlations between .5 and .6). These are substantial correlations, but they fail to explain over half of the variation in AP Examination grades. Controlling on PSAT/NMSQT scores helps make the students arriving in each class more comparable, but leaves plenty of room for other effects to be found.

The correlations observed in Table 9 are similar to those found by Camara and Millsap (1998) in their study of 700,000 students who took the PSAT/NMSQT in October 1993 or 1994, and one of 29 AP Examinations in May 1994 or 1995. Camara and Millsap looked at other possible predictors of AP grades, including overall high school GPA, course grades in related subjects, and numbers of courses in related subjects. The PSAT/NMSQT score was by far the best predictor of AP grades, with an average correlation of .52 with AP grades; the next best correlation, for total high school grades, averaged .27 over 25 AP Examinations. In multiple regression equations combining the various predictors, both total grades and relevant course grades made very small (but statistically significant) independent contributions to prediction. The results in Table 10 were reported for our two target examinations.

These correlational results support the use made of PSAT/NMSQT scores in this study. The Camara and Millsap results show that the prediction of AP grades using the PSAT/NMSQT alone is nearly as good as the prediction including other relevant predictors (the correlation increased by .03 for AP Calculus AB and by .01 for AP English Literature and Composition when total grades and relevant course grades were added to the PSAT/NMSQT in the prediction equation). Therefore, our adjustment based PSAT/NMSQT alone provides most of the adjustment for students' prior educational background possible from data available on College Board testing files.

These evaluations encouraged the research team to use the difference between predicted and actual AP

Examination grades as one indicator of a successful teacher. For each teacher, two measures of success could be computed: their success with African American students and their success with the combined group of Mexican American and Puerto Rican students. We computed the difference between the actual and predicted AP Examination grade for each teacher's students in each of the two target minority groups. A predicted AP grade can be interpreted as the average AP grade for all students with a given PSAT/NMSQT score. By our research definition, an effective AP teacher's students learn more than students with the same PSAT/NMSQT scores usually learn. Each success indicator was the average for the teacher's students in one of the two target minority groups. Teachers were ranked according to their average for each target minority group separately. The top one-third of teachers were identified as potentially more successful in teaching that minority group; the bottom third were identified as potentially less successful in teaching that minority group.

These measures of success can be interpreted as follows. The top third of teachers had minority students who did better in the AP Examination than their PSAT/NMSQT scores predicted, the lower third of teachers had minority students who did worse than their PSAT/NMSQT scores predicted. Because we subtracted the predicted AP grade from the actual AP grade, we essentially subtracted out the quality of students' academic backgrounds. A successful student could be a poorly prepared student who gets a low AP grade, so long as the AP grade is higher than one predicted by the PSAT/NMSQT. Equally, the successful student could be a well prepared student who does even better on the AP Examination. The minority students of teachers identified as possibly successful *do better than expected, regardless of their preparation when they entered the AP class.*

This indicator of success is not ideal. The PSAT/NMSQT is a general measure of educational background; academic preparation of specific benefit to the AP class will not be well measured by the PSAT/NMSQT. The students may have useful nonacademic traits such as ambition or interest in the subject when they walk into the AP classroom as well. These will also not be well measured by PSAT/NMSQT scores. These preexisting assets and deficits, because they are not well reflected in PSAT/NMSQT scores, cannot be controlled and may be incorrectly ascribed to the AP teacher. Furthermore, the PSAT/NMSQT scores and AP Examination grades were not available for all students, and the students who do not have scores are probably different from those who do.

TABLE 10

**Predicting AP Grades with PSAT/NMSQT Scores, GPA, and Relevant Course Grades for All AP Test-Takers with PSAT/NMSQT Scores\***

AP Examination	All Predictors	PSAT/NMSQT+ GPA+ Relevant Grades	PSAT/NMSQT Alone
English Lit and Comp	–	.63	.62
Calculus AB	.52	.52	.49

\*Data taken from Camara and Millsap (1998), p. 15.

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However, even though this indicator may not be a highly accurate guide for identifying *individual* teachers who are especially successful and unsuccessful in teaching AP to minority students, we believe that the group of teachers identified as more successful is likely to contain more than its fair share of successful teachers, and the group identified as less successful is likely to contain less than its fair share of successful teachers. Thus our descriptive analyses of these groups contain useful information on the characteristics and teaching techniques of more successful AP teachers of minority students compared to less successful teachers.

The definition of success used in this study is only one of many possible definitions. For example, Camara and Millsap (1998), in their study of the usefulness of PSAT/NMSQT scores in predicting AP Examination grades, created tables showing the proportion of students at various PSAT/NMSQT score levels who scored 3 or more on the AP Examination. For the AP English Literature and Composition Examination, they found that fewer than one in five AP students with PSAT/NMSQT verbal scores below 40<sup>11</sup> achieve an AP grade of three or higher. For the AP Calculus AB Examination, the success rate was even lower: fewer than one student in ten with PSAT/NMSQT mathematical scores below 40 achieve an AP grade of 3 or higher.

These results have been interpreted to mean that students with moderate to low PSAT/NMSQT scores are unlikely to succeed in AP courses. It certainly demonstrates that students with lower PSAT/NMSQT scores are unlikely to score high enough to receive college credit for their AP course. Our study defines success in AP courses somewhat differently than Camara and Millsap: we include students who learn a great deal in the AP course, whether or not they learn enough to earn college credit. Other possible definitions of success, not measured either in this study or in Camara and Millsap, might include improved confidence in their ability to do college-level work, increased likelihood of studying the AP subject in college, or improved college performance in subjects studied in AP courses. Any of these outcomes might also occur despite low PSAT/NMSQT scores.

## *Independence of Success Indices from the School Context*

Before going on to the description of the characteristics and teaching techniques that distinguish successful teachers of minority students, we need to cover one more potential difficulty in interpretation. Ultimately, one would wish to evaluate the effectiveness of AP teachers, controlling for the contextual differences out of their control—supportive school climate or not, informed or distrustful parents, excellent Pre-AP preparation or none, etc. We were not able to reach that goal in our study. The measures of success we defined attempt to account for the students' general educational background by controlling on PSAT/NMSQT scores, but the question still remains whether that control was sufficient. It is still possible that success could be related to contextual factors, either in the school or beyond, that the individual teacher could not control or overcome. In this section, we will review school-level information that may affect outcomes. Information about the school population of students and parents, the background and qualifications of its teachers, and its policies and practices, was provided by the school questionnaire designed for this study.

Questions from the school questionnaire were correlated with the success indicators<sup>12</sup>. (See the Appendix for a copy of the school questionnaire.) Correlations between school characteristics and the teacher success indicators would suggest that the teachers alone may not be responsible for student achievement in AP classes. This, of course, is only common sense. If the school as a whole encourages minority student achievement, one would expect more minority students to take all AP courses. If the school prepares its students well for AP courses, one would expect better achievement for all students, minority or majority, in AP classes. Because this is an exploratory study, we did not base our analysis on statistical significance tests. Instead, we report on correlations of .2 or above, which may be of practical significance to those selecting or training AP teachers. The table of results does not present the numerical correlation coefficients themselves, but uses an X to represent a correlation of +.2 or higher and a -X to represent a correlation of -.2 or lower. The purpose is to focus on characteristics that may be worth future investigation rather than exact numerical results.

<sup>11</sup> On the 20–80 PSAT/NMSQT scale, not recentered.

<sup>12</sup> A total of 41 school variables were defined and correlated with four success indices (success with African American students in AP Calculus AB, success with Mexican American/Puerto Rican students in AP Calculus AB, success with African American students in AP English Literature and Composition, and success with Mexican American/Puerto Rican students in AP English Literature and Composition) for a total of 164 correlations.

Table 11 shows selected school variables that correlate with teacher success indicators. In general, the correlations between school characteristics and success indicators are small (Cohen, 1977). Eighteen characteristics correlate +/- .2 or more with the success in teaching indicator in one or more of the four analyses.<sup>13</sup>

One school characteristic has notable correlations in three of the four groups. Of data about the student body generally available to principals, the percent of students eligible for free or reduced-cost lunch is one of the most effective SES variables (Carnevale and Rose, in press). In addition, three other questions were asked about school characteristics related to SES and all three are noted for one or more groups—the percent of seniors who graduate, the percent of graduates who go on to college, and the percent of seniors who are *not* members of underrepresented minority groups. Another series of school characteristics also correlate with teacher success in one or more groups—the principal’s rating of the academic quality of either the student body as a whole, or of underrepresented minority students in the student body. Ten questions asked about the whole student body, and a matching 10 questions asked about underrepresented minority students. For these 20 questions, a total of 10 show notable correlations. The same questions, moreover, were identified as notable for the

student body as a whole and for underrepresented minority students: the students’ academic backgrounds on arrival in the school; their attitude toward academic achievement; the parents’ level of education; and the parents’ support for the AP program. A few other miscellaneous school characteristics are reported in Table 11, but the above were the ones that appeared to have some rationale or consistency.

The SES of the school is the only school characteristic found that may affect success in teaching AP Calculus AB or English Literature and Composition to African American students, once you have taken their PSAT/NMSQT scores into account. More school characteristics were noted as possibly related to success in teaching AP subjects to Mexican American and Puerto Rican students. The two school characteristics that might influence student success beside their overall academic background as measured by the PSAT/NMSQT are the school’s socioeconomic status and some measures of student body quality. These school characteristics make sense as having an effect not accounted for by PSAT/NMSQT scores. PSAT/NMSQT scores are not intended to measure and are not closely related to school SES, student or parent attitudes, or parental levels of education. Although PSAT/NMSQT scores *are* intended to measure students’ overall academic background,

TABLE 11

**Relationship of School Characteristics to Success in Teaching Minority Students**

Question Number		Calculus		Literature	
		AA	M&P	AA	M&P
A4	Percent of students <i>not</i> eligible for free or reduced-cost lunch	X	X		X
A5	Percent of seniors who graduate				X
A6	Percent of graduates who go on to college				X
A7	Percent of students <i>not</i> underrepresented minority			X	X
A8	School has special entrance requirements				X
A12a	Rating of students’ academic background on arrival				X
A12b	Rating of students’ attitude to academic achievement				X
A12c	Rating of students’ regard for school property	-X			
A12f	Rating of parents’ level of education				X
A12h	Rating of parents’ support for AP		X		
A13a	Rating of minority students’ academic background on arrival				X
A13b	Rating of minority students’ attitude to academic achievement				X
A13f	Rating of minority parents’ level of education			-X	X
A13h	Rating of minority parents’ support for AP		X		
B3	Percent of AP students <i>not</i> eligible for free or reduced-cost lunch	X			
B5	Average number of years teaching experience, AP teachers	-X			
B10a-e	School supports attendance at AP Workshops		X		
B27	Grade of 3+ on AP Exam an important goal				X

Correlations between +0.2 and -0.2 are not noted.

<sup>13</sup> Note that for this and all other correlation analyses, the “success in teaching” indicators were (1) the average residual from the prediction for all of the teacher’s African American students with both PSAT/NMSQT scores and AP grades, and (2) the average residual for all the teacher’s Mexican American and Puerto Rican students who took both tests. The clustering into three success groups was done only for categorical analyses.

recall that the only scores used in the analysis of teacher success were those of target minority students in AP classes. This finding suggests that there may be an overall effect of good academic preparation in the student body as a whole that goes beyond the accomplishments of individual students.

We now move on to one of the main purposes of the study: determining student outcomes for teachers identified as more and less successful in teaching minority students. In these analyses, we will need to bear in mind that overall school SES (for students in both target minorities) and the school academic atmosphere (for Mexican American and Puerto Rican students) may be partially responsible for the apparent success of teachers.

## IV. Student Academic Performance

The most important measure of teacher success in this study is the AP Examination grade, since it represents what the student learned in the course. Table 12 reports average AP Examination grades for teachers identified as more and less successful in teaching target minority students. Because we suspected that there were systematic differences in the educational backgrounds of the students entering AP classes, we also give a *predicted* AP grade based on the

students' initial PSAT/NMSQT scores, and the difference between the actual and predicted AP scores. A positive difference indicates that the students of teachers in that category on average scored higher than predicted; a negative difference indicates that the students of teachers in that category scored lower than predicted.

Note that some groups are excluded from Table 12. For the target minority students in the classes of teachers selected as more and less successful for that group, performance is an artifact of how successful teachers were identified. Successful teachers are those whose minority students earn AP grades that are on average higher than their PSAT/NMSQT scores predict. Similarly, the target minority students of teachers identified as less successful for that group have lower AP grades than one would expect based on their PSAT/NMSQT scores. So performance of target groups, where contaminated by the selection method, is not reported in the table.

We know that for the target minority groups, the students' relative AP grades are higher than their relative standing on PSAT/NMSQT for more successful teachers and lower for less successful teachers, since that was how the more and less successful teachers were identified. But what about the grades of students whose performance did not enter into the definition of success? It makes sense that teachers successful with one group of students will also be successful with other groups. So if we find that teachers identified as successful with African American students, for example, also tend to have relatively high AP grades

TABLE 12

**Average AP Grades for More and Less Successful AP Teachers: Their Success with Nontarget Groups**

		<i>Teachers Successful with African American Students</i>			<i>Teachers Successful with Mexican American and Puerto Rican Students</i>		
		<i>More</i>	<i>Less</i>	<i>Difference</i>	<i>More</i>	<i>Less</i>	<i>Difference</i>
<i>AP Grades for AP Calculus AB</i>							
African American Students	Actual	(Target Group)			2.71	1.59	
	Predicted				2.23	1.74	
	Difference				.48	-.15	
Mex. Am. & P.R. Students	Actual	3.05	1.77		(Target Group)		
	Predicted	2.37	2.06				
	Difference	.68	-.29				
White Students	Actual	3.33	2.37		3.11	2.58	
	Predicted	3.08	2.82		2.97	2.91	
	Difference	.25	-.45		.70	.14	
<i>AP Grades for AP English Literature and Composition</i>							
African American Students	Actual	(Target Group)			2.62	1.73	
	Predicted				2.42	1.90	
	Difference				.20	-.17	
Mex. Am. & P.R. Students	Actual	2.43	1.80		(Target Group)		
	Predicted	2.40	2.04				
	Difference	.03	-.24				
White Students	Actual	3.25	2.48		3.18	2.74	
	Predicted	3.18	2.96		3.16	3.01	
	Difference	.07	-.48		.55	.02	

for white and Mexican American and Puerto Rican students, this is another piece of evidence that we have correctly identified more and less successful teachers.

Overall, Table 12 shows that the mean student AP Examination grades for teachers selected as more successful in teaching minority students are strikingly higher than those identified as less successful. This may, however, be due to the initial preparation of their students. The predicted grades for the more successful teachers also tend to be higher than for the less successful teachers. Since the predicted grades are based on PSAT/NMSQT scores, we know that the more successful teachers tend to have students with better academic backgrounds on the average. By subtracting the predicted grade, however, we adjust for those differences in previous academic background. By looking at the rows that summarize the differences between actual and predicted AP grades, we can see that the AP teachers selected as successful with one target group are also successful in teaching students in other groups. Similarly, teachers identified as less successful with a target group are also less successful with other groups.

For example, look at the data for the performance of *white* students in the AP Calculus AB classes of teachers identified as more and less successful in teaching African American students (the third grouping of rows in Table 12). The white students of teachers identified as more effective with African American students obtained an average AP grade .25 grade points higher than predicted (3.33 versus 3.08); the white students of the less effective teachers obtained an average AP grade .45 grade points lower than predicted (2.37 versus 2.82). The net difference for white students who studied with more and less successful teachers of African American students is .7 AP grade points (.25 – [-.45] = .7). For white students of calculus teachers more and less successful with Mexican American and Puerto Rican students, the difference is .47 grade points. These net differences are reported in the column labeled “Difference.”

In this comparison, the AP Calculus AB teachers show

moderate differences in the relative achievement of their nontarget students, averaging .7 grade points difference between the more and less successful teachers (about .8 grade points difference between the more and less effective teachers of African American students and about .6 grade points difference between those more and less effective with Mexican American and Puerto Rican students).

The differences in relative achievement for nontarget students in AP English Literature and Composition teachers are smaller (averaging about .4 AP grade points between teachers more and less effective with both target minority groups.) These differences can be considered small to moderate in size, ranging between 20 percent and 80 percent of a standard deviation of the AP grades. Still, these differences are not artifacts of the definition of success, and provide additional support that teachers identified as more successful for target minority groups are in fact better teachers, and that teachers good with one group of students tend to be good with other groups of students.

Another piece of evidence that good teachers for one group are good for another is the extent to which teachers’ success level is similar for both target minority groups. This is not an ideal measure, since there are a number of teachers that did not have students in both target minority groups. The correlation between success in teaching African American students and Mexican American and Puerto Rican students is .4 in AP Calculus AB, but only about .1 in AP English Literature and Composition (see Table 13).

The size of the difference for the target groups between more and less successful teachers is also a matter of interest, even though these results are partially an artifact of the method of selecting more and less successful teachers. These results, not reported in Table 12, show that there is a substantial difference between target group performance for the more and less successful teachers. The differences are somewhat larger in AP Calculus AB than in AP English Literature and Composition (see footnote for specifics)<sup>14</sup>.

Having reviewed the student outcomes for more and

<sup>14</sup> The performance difference for target groups students of more and less successful teachers is more than 1 standard deviation in Calculus (1.14 AP grade points [SD=1.08] for African American students and 1.33 AP grade points [SD = 1.23] for MA/PR students), or about 1.1 SDs for both target groups. The difference between target group performance for more and less successful teachers was just under 1 SD in Literature (.62 AP grade points [SD = .91] for African American students and .85 AP grade points [SD = .97] for MA/PR students). This translates to .7 SDs for African American students and .9 SDs for Mexican American/Puerto Rican students. According to Cohen (1977), 80 percent of a standard deviation is considered a large difference. Thus, the target minority students in both AP Calculus AB and AP English Literature and Composition who had a teacher identified as more effective with their group had a real advantage. As another way of understanding the size of the difference between more and less effective teachers, one can, for example, estimate that 32 percent of the African American students in the more effective teachers’ classes would earn a 3 or higher on the AP Calculus AB Examination, while 2 percent would earn a 3 or higher in the less effective teachers’ classes. (This group was chosen as an example because the students started out with equivalent backgrounds as measured by the PSAT/NMSQT—average V = 49 and M = 51 for African American students of both the more and the less effective teachers. In the more effective teachers’ classes, the mean and SD of AP grades were, respectively, 2.45, 1.15. In the less effective teachers’ classes they were 1.32, 0.64. A score of 3 would be .48 SDs above the mean for the more successful teachers and 2.65 SDs above the mean for less successful teachers. Assuming a normal distribution of AP grades, the probability of a score of 3 or higher would be 0.32 and 0.02, respectively.)

TABLE 13

**The Relationship Between Success in Teaching African American Students and Success in Teaching Mexican American and Puerto Rican Students**

	<i>Calculus</i>	<i>Literature</i>
Correlation	.40	.11
N	43	44

less successful teachers, we can now move to a second main purpose of the research. That is to determine whether individual teachers' background, education, or teaching practices can be shown to have a relationship with effectiveness in teaching minority students. In the next section, we will discuss the correlations between success in teaching minority students and the teacher's questionnaire description of participating AP teachers.

## V. Teaching Minority Students

### *Characteristics of AP Teachers Successful with Minority Students*

To determine whether teaching practices or teacher characteristics are related to success in teaching minority students, questions on the teacher questionnaires (see Appendix) were correlated with success indicators. For example, question A1, teacher gender, was coded 1 = male and 2 = female. A positive correlation between gender and one of the success indicators would indicate that women teachers were more successful than men. Some of the questions had to be specially coded. For example, the question asking about the teacher's race or ethnic group (A2) was broken into several variables. Question A2 option c ("Black/African American, non-Hispanic") was coded 1 = yes, 0 = no. A positive correlation for this question would indicate that African American teachers were more successful than non-African American teachers.

One hundred ninety-six (196) teacher variables were defined from the AP Calculus AB teacher questionnaire and 175 from the AP English Literature and Composition questionnaire<sup>15</sup>. Each of these variables was correlated with the measure of success in teaching African American

students and the measure of success in teaching Mexican American and Puerto Rican students<sup>16</sup>. As in the earlier analysis of correlations between school characteristics and policies and teacher success, we did not base our analysis on statistical significance tests, and we do not present the numerical correlation coefficients, but use an X to represent a correlation of +.2 or higher and a -X to represent a correlation of -.2 or lower. The purpose is to focus on characteristics that may be worth future investigation rather than exact numerical results.

**Overview.** There were few items on the teacher questionnaires that correlated with our measures of success in teaching minority students. They clustered in two areas: emphasis on some of the topics and skills in the AP curriculum is the first area; the teacher's evaluation of the academic quality of students who attend the high school, both the total student body and minority students in particular, is the second area. Many of the variables suggested in the literature review were not found to be related to success in teaching AP to minority students. Overall, the teacher's experience in teaching, academic degrees and certification, attendance at AP workshops and Summer Institutes, or general sources of support at school do not appear to be related to success in teaching minority students. The teacher's specific academic preparation in the subject and professional development in teaching techniques are also generally not related to success. Finally, the school's and the teacher's policies and practices in selecting AP teachers, in informing and selecting AP students (including special efforts for minority students), and in encouraging students to take the AP Examination are not related to success in teaching minority students. There are sporadic correlations in some of these areas, but the only concentrations of correlations are in curriculum and student body quality.

**Quality of student body.** A series of questions that seemed particularly related to success for minority students involved the teacher's rating of the overall academic quality of the student body in general, and of the overall academic quality of the minority students attending the school (teacher questionnaire questions D3 and D4). This was true both for AP Calculus AB and for AP English Literature and Composition teachers. Most of these questions had to do with what students brought to the school, including the students' academic background on arrival, their aspirations, their parents' level of education and support of education. These questions could be interpreted straightforwardly as measures of

<sup>15</sup> There were fewer curriculum questions on the AP English Literature and Composition questionnaire. See Appendix.

<sup>16</sup> Note that for this and all other correlation analyses, the "success in teaching" indicators were (1) the average residual from the prediction for all of the teacher's African American students with both PSAT/NMSQT scores and AP grades, and (2) the average residual for all the teacher's Mexican American and Puerto Rican students who took both tests. The clustering into three success groups was done only for categorical analyses.

TABLE 14

## Relationship of Teacher Rating of Student Quality\* to Success in Teaching

Rating Category	Calculus				Literature			
	All		Minority		All		Minority	
	AA	MP	AA	MP	AA	MP	AA	MP
Academic background on arrival in HS	X	X	X	X	X			-X
Attitude toward academic achievement		X		X	X	X	X	
Regard for school property	X	X	X					
Aspirations to attend college		X		X				
Academic preparation of AP students		X		X	X	-X		
Parents' level of education	X			X	X			
Parents' support for student achievement								
Parents' understanding/support of AP					X	-X		-X
Prelim. courses to prep students for AP	X	X		X				
Sum of above quality ratings		X		X	X		X	-X

Correlations between +.20 and -.20 are not noted.

\* Teacher questions D3 and D4. D3 rates the student body as a whole ("All"), D4 rates the minority student body ("Minority").

the background of AP students outside of the teachers' control. However, they might also be seen as reflecting the teacher's subjective perception of his or her students, which could also affect the teacher's success. The answers that school principals gave to these same questions (summarized in Table 11) have quite a different relationship to the success measures than the teachers' ratings<sup>17</sup>. This suggests that the teachers' responses may capture more than the students' objective backgrounds.

Table 14 presents the results of the teachers' ratings of the student body. All 10 of the questions asked about student body quality are presented, and all correlations of +/- .20 or more extreme are noted. The first two rating questions—the students' academic background on arrival in high school, and their attitude toward academic achievement in general—are related to teacher success in most groups. The sum of ratings over the entire set of questions ("sum of above quality ratings") is the next most frequently noted variable. Several questions are related to success in teaching AP Calculus AB but not English Literature and Composition—the students' regard for school property, their aspirations to attend college, and the preliminary courses offered by the school (or school system) to prepare students for AP classes. The Literature teachers' ratings are not as frequently correlated with success (especially success in teaching Mexican American and Puerto Rican students).

**Curriculum in AP Calculus AB.** Table 15 reports correlations between AP Calculus AB curriculum topics on functions, derivatives, and integrals and the measures of success in teaching minority students. The correlations (all positive) show which topics are emphasized more by successful teachers and less by unsuccessful teachers. Topics that are not correlated tend to be emphasized

equally by all teachers. All 17 content topics are reported, although only the section on integrals shows a consistent pattern of association with success in teaching minority students. The sections of the table on functions and derivatives illustrate the kind of sporadic pattern of correlations observed for most of the questionnaire. In

TABLE 15

## Calculus: Relationship of AP Curriculum Emphases\* to Success in Teaching Minority Students

Calculus Curriculum Topic	AA	M&P
<i>Functions</i>		
Analysis of graphs		X
Limits of functions		
Asymptotic unbounded behavior		
Continuity as a property of functions		
<i>Derivatives</i>		
Concept of a derivative		
Derivative at a point		
Derivative as a function		
Second derivatives		
Applications of derivatives	X	X
<i>Integrals</i>		
Riemann sums	X	X
Interpretation and properties of definite integrals	X	
Applications of integrals	X	X
Fundamental theorem of calculus		
Techniques of antidifferentiation		
Applications of antidifferentiation	X	X
Numerical approximations to definite integrals	X	

Correlations between +.20 and -.20 are not noted.

\*Question C3a–C3q.

<sup>17</sup> For example, only one of the eight positive correlations of principals' ratings is also noted as a positive correlation for teachers. (Rating of the overall student body attitude toward academic achievement by literature teachers successful with M & P students.)

these two sections, the only topics correlated with success in teaching minority students are those requiring the students to use and apply the concepts they are learning. Many of the topics in integrals are related to success. These are among the core concepts of calculus. This analysis suggests that teachers who emphasize integrals and some topics that require application of calculus concepts may be more successful in teaching African American, Mexican American, and Puerto Rican AP students.

**Curriculum in AP English Literature and Composition.** Table 16 reports correlations between AP English Literature and Composition curriculum topics and the measures of success in teaching minority students. This set of questions gives more hints about successfully teaching Mexican American and Puerto Rican students than African American students. The only curriculum topics that are related positively to the success measures for African American students involve critical reading; close reading for multiple meanings, and observing textual detail and establishing connections. The only other notable correlation for African American students is the *negative* correlation with emphasizing a wide range of vocabulary in writing. Teachers successful with Mexican American and Puerto Rican students

TABLE 16

**Literature: Correlation of AP Curriculum Emphases\* with Success in Teaching Minority Students**

<i>Literature Curriculum Topic</i>	AA	M&P
<i>Literature</i>		
Experience—subjective dimensions of reading and responding		
Interpretation—close reading for multiple meanings	X	
Evaluation of artistic achievement; social and cultural value		
Identifying and discussing structure, style, and themes		X
Identifying and discussing figurative language, imagery, symbolism, tone		X
Observing textual detail and establishing connections	X	X
Developing and organizing ideas in clear, coherent, persuasive language		X
<i>Composition</i>		
Writing to understand a literary work		
Writing to explain a literary work		
Writing to evaluate a literary work		X
Using a wide range of vocabulary	-X	X
Using a variety of sentence structure		X
Having a logical organization		
Balancing generalization with specific illustrative details		
Effectively using rhetoric		X
Writing under time constraints		

Correlations between +.20 and -.20 are not noted.

\* Question C3.

emphasize the specifics of literary analysis—structure, style, and themes; figurative language; textual detail and connections. They also emphasize the specifics of writing: using a wide range of vocabulary, a variety of sentence structures, and effectively using rhetoric. Finally, they emphasize the overall goal of developing and organizing ideas in clear, coherent, persuasive language.

**Other teacher characteristics and practices correlated with success in teaching minority students.** Table 17 summarizes other teacher qualities correlated with success in teaching. All of these questions were asked of all teachers regardless of the subject taught, so the results for Calculus and Literature are presented together. Only those characteristics that correlated with success in more than one subject or more than one target minority group are noted, since the pattern of correlation offers some additional evidence that the correlations are not merely due to chance fluctuations.

The most noted characteristic is the teachers' own rating of their knowledge of the AP Program and examination, and of the subject area. Amount of recent professional development in the subject area is also noted. Two demographic teacher characteristics are related to success: being a woman (both subjects and both target minority groups), and being white (both target groups in Literature). Two questions noted for Calculus teachers only relate to rising trends in the number of students, and the number of minority students, dropping AP classes. Finally, for Calculus only, teachers who place a high value on students' earning a 3 or better on the AP Examination are more likely to succeed with minority students. The teacher's academic self confidence and participation in academic professional development are the only results here that are clearly interpretable.

TABLE 17

**Relationship of Other Teacher Characteristics and Practices to Success in Teaching Minority Students**

<i>Teacher's Questionnaire, Common Questions</i>	<i>Calc.</i>		<i>Lit.</i>	
	AA	M&P	AA	M&P
Teacher is a woman	X			X
Teacher is white (non-Hispanic)			X	X
Professional development in discipline		X	X	
Knowledge of field now	X		X	X
Knowledge of AP Program and exam now	X	X		X
Trend in all students dropping AP		X		
Trend in minority students dropping AP	X	X		
AP goal: students earn 3+ on AP Exam	X	X		

Correlations between +.20 and -.20 are not reported.

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## VI. Focus Group Results: Useful Practices for Teaching Minority Students

### *The Study*

In February 2000, a sample of nine AP Calculus AB and nine AP English Literature and Composition teachers who had provided data for the minority success study were invited to participate in one of three focus groups. Teachers identified as above average in their success either in teaching or enrolling underrepresented minority students were invited to participate.<sup>18</sup> Two focus groups were held in Manhattan, one for AP English Literature and Composition teachers and one for AP Calculus AB teachers; the third was a three-day online interaction in a bulletin board format that included teachers in both subject areas. The purpose of the focus groups was to gather specific illustrations for the final report of this project that would be useful for AP teachers or for those responsible for recruiting, training, and retaining AP teachers. The results reported below are based on quotations or paraphrases from the transcripts of the three focus group sessions.

The participants included teachers between the ages of 28 and 55, ten women and seven men, three African American and fourteen white. All teachers had at least four years' experience teaching AP courses; three had more than ten years' experience. Although not all teachers were asked about the percentage of their students who are minority, virtually all mentioned that more than half of their AP students belong to minority groups; several teach only minority students.

In both the live focus groups and the online bulletin board, teachers were asked about:

- how they prepare to teach AP classes
- specific methods they use when teaching minority students
- teacher attributes needed to teach minority students
- professional development experiences
- “wish list” of resources to enhance their teaching
- recommendations to improve AP programs and to recruit quality AP teachers

The focus groups took two hours each; the bulletin board lasted for three days. All were held in February 2000, hosted by Harris Interactive.

### *Results*

**Good teachers of minority students are good teachers.** The teachers did not want to generalize about minority students. They consistently maintained that effective teaching for minority students is no different from effective teaching for any student.

- “The personal attributes needed to be a teacher of minorities would be the same attributes needed just to be a teacher: Knowledge and love of your subject, organization skills, patience, perseverance, the ability to see your students as individual people with their own needs and personalities.”
- “A teacher must know the subject he/she is teaching, love people and students in particular, believe in the abilities of all motivated students to master the material, possess a genuine desire to motivate those who are not as aggressive as the others, be able to make the material he/she is teaching fun and be able to make the students laugh about something between problems.”

Several reasons for this emphasis on the common elements of good teaching came up in the discussion. The teachers were unwilling to commit the common error of assuming all minority students are academically backward and poor. Another important factor was their commitment to teaching their subject to demanding academic standards. They wanted to make clear that they do not change their standards for minority students. A third important factor was the teachers' belief that to teach students well, one must demand excellent performance and believe that the students are capable of excellent performance. The teachers did not feel they would be doing minority students any favor by changing their standards.

**Teachers should apply high standards fairly to all students.** The teachers said in a number of different ways that the most important attribute of a teacher of minority students is fairness. Equally important is that the students know the teacher is fair. What is meant by fairness? Teachers

- apply rules firmly and consistently, not making excuses for students' minority status
- maintain high expectations of themselves and of their students and communicate those expectations clearly

<sup>18</sup> The “success in enrolling” variable was dropped from the study later.

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Fair treatment gives students the chance to achieve excellence. In addition, students become aware of low expectations. Some students conclude that the teachers are right and learn to expect less from themselves. Even students who maintain a belief in their own competence may still feel the pressure of their teachers' stereotypes (Steele and Aronson, 1995).

- “Counselors often use [students’] background to plead for an erosion of standards. Personally, I find this to be an immoral thing to do to a student.”
- “When the chips are down, [people] can get accusatory, blaming the kids’ home lives, different educational values, and failed upbringing for everything that cannot be achieved in classes. Of course these things are never said directly to kids, but they get the message.”

Some students have attended schools with small budgets, poorly trained teachers, inadequate counseling, and many discipline problems; have experienced spotty instruction; will be the first in their family to go to college, have low incomes, or have grown up in a non-English-speaking family. Minority students are more likely than white students to face one or more of these problems. Teachers need to have a solid belief in minority students’ ability to do excellent work. However, they also need to attend to whatever problems individual students actually have. The participating teachers had several suggestions about how teachers can best help students overcome any problems they may have. See the following paragraphs for these suggestions.

**Teachers need strong content knowledge and teaching skills.** A myth has grown up about AP students: That they are so well prepared and so motivated that they can practically teach themselves. Such students would be likely to be relatively invulnerable to teacher deficiencies. This myth was probably never true—most AP students have always been ordinary college-prep high school students—but it is certainly not true in many places today. Legislatures are supporting AP courses in every school; school districts are mandating AP programs as a way of improving the standards for the entire high school curriculum; schools, including many minority-dominant schools, are using AP classes to encourage students to consider college and to help them prepare for college. These students are definitely not invulnerable.

**Teachers need to make sure that the most fundamental content and skills in the AP curriculum are well covered.** One literature teacher spoke of the primary need to teach students to read *actively* and *critically*, skills that they do not necessarily learn in earlier classes. One calculus teacher requires students to give their answers aloud in standard English. This rule was designed to help

students present themselves in academically acceptable ways. Another calculus teacher has students deliver equations verbally, encouraging them to understand the concepts and operations, not just repeating a shorthand expression like “ $dv/dt$ .” Both of these teachers are accomplishing both ends: Helping students learn standard academic English, and helping students understand the concepts and operations behind the formulas. Many of the teachers discussed how to make sure that the fundamentals are covered.

*Calculus teachers:*

- teach slowly and thoroughly, with lots of examples (also important in Literature)
- give frequent quizzes
- send students to the chalkboard often
- relate mathematical abstractions to real situations of interest to the students
- encourage students to use their graphing calculators to understand problems
- encourage students to use AP CDs so they can repeat mathematical concepts as often as they need to
- make sure that students learn the writing skills they need to communicate their ideas (also important in Literature)

*Literature teachers:*

- teach slowly and thoroughly, with lots of examples (also important in Calculus)
- focus students on a single paragraph to help them understand the writer’s tone and use of rhetoric
- encourage students to use sticky notes so they can annotate books they’re not allowed to write in
- relate literary characters and situations to students’ experiences
- make sure that students become familiar with the classics of literature
- make sure that students learn the writing skills they need to communicate their ideas (also important in Calculus)

Having students work together in small groups is a method for improving academic skills mentioned by several teachers.

**Teachers can and do use a wide variety of teaching techniques.** Although having students work in small groups was frequently mentioned, a number of different approaches were used.

- “I have my kids sit in pairs or threes and discuss the problems, because there’s no point in a kid sitting there staring at a calculus problem, [not knowing] what to do. It helps for them to talk with each other about a problem, because somebody may have an idea and that gets it started.”

This teacher is simply interested in what works to get problems solved. Another is interested in what helps motivate students.

- “Sometimes students who are unmotivated to succeed on an individual assignment will be willing to try to help someone else get a good grade. They don’t want to let the other person down.”

Still another thinks about group dynamics.

- “My students work in pairs initially to build a sense of community and security. I usually begin to wean them in November, and by December they are working alone. After this they come together twice again: Once for a research project (a team effort), and again for an oral presentation. Once they are individuated, the competition gets fierce.”

But not all AP teachers endorse group work because it can take longer, get loud, encourage talking about other matters, result in “group answers,” or allow some students to coast.

- “I am not as skilled at making sure group work is effective, partially because I know how group work tends to go....One or two students do everything because they are bright or because they are determined to get a good grade for the group, and three or four other students do very little and learn next to nothing.”
- “If [group work is] not carefully planned, it doesn’t work.”
- “My primary mode of teaching is lecture-style—simply to make sure all material is covered, even beyond the AP Calculus AB Exam. I would never finish this material in a group format.”

However, we will let the last word on using groups in AP classes go to the following careful planner.

- “I randomly choose the groups so everyone in these racially mixed classes gets a chance to work with most everyone else in a class. I think they are more willing to open up in a group, and discussions tend to be less dominated by the more aggressive personalities in the class.”

**Teachers need to supply both information and a level of comfort about college work and college itself.** Perhaps the teachers’ most important advice is to gain

parents’ understanding and cooperation. The family’s tacit assumption that a child will or will not attend college is crucial to their understanding and support of the AP Program.

- “It is almost impossible for a teacher to undo 17 years of low expectations [about going to college] unless the student has a reason to outdo her/his parents.”

Both parents and students need to learn about college, and need to become comfortable with the idea of the student going away from the family to attend college. They need to picture what college is like and picture the student in college. They need to understand the AP program in that context and support the demands that an AP class will make.

- “More and more families have been introduced to AP Exams and earning college credit and the idea of [their children] going away from the family for college.”
- “[Our counselors] have evening information sessions and workshops for [students and their families]. They also help the students and parents with financial aid forms and with college applications. This has really helped improve the participation of minority students.”
- “I spend a fair amount of time explaining [to parents] the amount of work that students have to do...the kind of work that will be done and how the students will be graded.”

Finally, a number of teachers spoke of the students’ interest in the teacher’s own college experiences and feelings about them. The teachers use a variety of methods to respond to this interest, perhaps telling stories in class about their college experience, or appealing to students’ competitive interest in being the smartest students in school, or simply responding to students’ questions about what it was like for them.

#### **Former AP students can be important allies.**

- “It is always a blessing to hear from former students and share their progress with your current students.... Sometimes they visit our high school while on break and tell us how things are going. This is a big plus!”

#### **Have a good AP program.**

- “The best way to build the numbers in any particular AP course is to make that course successful—that is, raise the pass rate on the exam. Each year after the first, my scores went up as my class size went up.... I also think that adding other AP courses such as statistics or even non-math programs can help to build a climate where AP is a positive, results-oriented experience.”

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**What these AP teachers are like.** Qualitative research is not particularly good at describing what everyone is like, but it does give one insights into the people who participated. So we talk briefly about what this particular group of AP teachers is like. These teachers are identified as ones who are likely to be successful in teaching or enrolling minority students. Moreover, they are enthusiastic enough about the AP Program to take the trouble to attend a focus group in Manhattan after school in February, or to log onto a bulletin board for three days running. What else do we know about them?

- They are enthusiastic about their subject area, are strong advocates of the AP Program, and respect, admire, and like their AP students.
- They have many different approaches to teaching and very different styles of personal interaction with students.
- A significant number of the participants mention feeling alone, unappreciated, not well supported, in a major competition for their own time and the time of AP students, and surprisingly modest about their own competence.
- Not all of the teachers had participated in AP professional development opportunities. Some who had not express unwillingness to take the time and frustration at the lack of support from their schools. Those who had, however, are most enthusiastic. As one reviewer of the transcripts put it, “they cherished even the rudimentary workshops provided and wanted far more.”
- Although they may or may not express enthusiasm for professional development, the participating teachers appeared to be genuinely excited by the opportunity provided by the focus groups to talk to other AP teachers, share problems, and get new ideas for teaching strategies or resources.

**The help teachers need.** This research showed that teachers are interested in strengthening AP programs, and many have achieved a great deal on their own. However, teachers report that they need external support too. They lack the time, funding, and political clout to make some of the changes needed.

## VII. Summary and Discussion

The purpose of this study was to explore methods of identifying Advanced Placement teachers who are suc-

cessful in enrolling and teaching students from minority groups now underrepresented in higher education, and identifying the background, training, and teaching practices used by such successful teachers. It was a practical study aimed at those most concerned with the Advanced Placement Program—districts, schools, and teachers, and also those who train new teachers and provide professional development to practicing teachers. Its goal was to suggest how to identify teachers likely to be effective with minority students, and to describe the methods used by teachers effective with minority students. The results of this exploratory study are suggestive but do not constitute proof either that the teachers selected are successful at teaching underrepresented minority students, or, even if they are successful, that the practices described are the ones making them effective. This study should be considered a necessary first step. More definitive studies cannot be done unless potentially successful teachers and potentially successful practices can be fairly simply identified for further study.

Two AP subject areas—Calculus AB and English Literature and Composition—were chosen for study. These are two of the most popular examinations for minority students; cover science and humanities majors; are taken by both young men and young women; and are offered in most schools that offer any AP courses. Schools with the largest numbers of underrepresented minority students who took AP Examinations in these two subjects were invited to participate—even so, invitations went to schools with as few as six minority examination takers in 1998. Two underrepresented minority groups were defined for analysis: African American students and a combined group of Mexican American and Puerto Rican students. Each teacher was evaluated separately on success with African American students specifically, and with Mexican American or Puerto Rican students specifically. This was a good decision, since the results indicate that the conditions of success may differ for these two target minority groups.

Two different measures of potential success were developed. The first was designed to measure success in enrolling underrepresented minority students; the second was designed to measure success in teaching them. While student achievement is a familiar measure of teacher success, we added student enrollment as a secondary measure of success simply because minority students cannot be successfully taught if they are not in class. Both measures were defined *relative* to the teacher’s environment. For the success in enrolling measure, the proportion of target minority students in the teacher’s AP class was compared to the proportion of that minority in the high school. For the success in teaching measure, target minority performance on the AP Examination was compared to

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AP performance as predicted by the PSAT/NMSQT. We attempted to evaluate how well each teacher did *given* how many students were available and how well those students were prepared (at least in a general sense) to take AP. Otherwise teachers in schools with the most underrepresented minority students would necessarily appear to be the best recruiters, and the teachers in the schools with the best prepared minority students would necessarily appear to be the best teachers.

The measure of success in teaching was satisfactory. Previous studies indicate that PSAT/NMSQT scores are good predictors of AP Examination grades; that school grades, even grades in closely related courses, add only slightly to the prediction of AP grades. Our own analysis suggested that many variables outside the teacher's control, such as quality of Pre-AP courses or school policy, may not relate to success once the students' overall academic backgrounds (as measured by the PSAT/NMSQT) are taken into account. While this study was not powerful enough to determine the more subtle correlates of success in teaching minority students, the factors that were identified seem to be supported by multiple lines of evidence and to have common sense support as well. They are worth pursuing in future research and program development. The measure of success in enrolling was less satisfactory, and was eventually dropped from the analysis. Focus group and teacher questionnaire results indicate that AP teachers generally do not consider recruitment to be part of their role. They depend on their colleagues teaching preliminary honors courses in the subject area and school counselors to identify and encourage potential AP students.

The quantitative information available from existing records and from the questionnaires designed specifically for this study was supplemented with qualitative information from focus groups. A group of participating teachers who appeared to be relatively successful in enrolling and teaching underrepresented minority students was identified and invited to discuss experiences teaching minority students. These discussions gave the research team a vivid understanding of how AP teachers feel about their students, their minority students, and about the AP Program.

### *What We Learned from the Review of Literature*

While the entire literature on effective teaching applies to minority students as well as majority students, there were a number of themes that seemed particularly applicable to minority students. These emphasized the following teacher behaviors in addition to a strong aca-

demic background and continuing high-quality professional development:

- high performance expectations for all students
- deep understanding of the characteristics of all students, including underachieving students, minority students, and disadvantaged students
- deep understanding of the cultural resources students bring to class, and awareness of the prevailing culture in school and the classroom
- a broad repertoire of effective teaching strategies and tools, including proficiency with learning technologies and familiarity with community resources
- ability to engage all students in meaningful learning tasks
- ability to personalize instruction and adapt it to the needs and learning styles of the students

In addition, a demanding AP program needs *cooperation* and *communication*

- hard work and a high level of commitment from the teacher, students, and parents
- clear communication of expectations and progress between the teacher, students, and parents

### *What We Learned from Successful Teachers: Focus Group Results*

These themes from the literature also appeared in the focus group discussions for this study. There were, in addition, some themes that applied specifically to the Advanced Placement Program.

- Good teachers of minority students are good teachers.
- Good teachers can and do use a wide variety of teaching methods.
- One way to encourage minority student participation is to have a good AP class.
- Teachers should apply high standards fairly to all students.
- Teachers should make sure that the most fundamental content and skills in the AP curriculum are well covered.
- Teachers should teach about college. Students and parents both need to know about college and feel comfortable about it.
- Teachers lack the time, funding, and political clout to make some of the changes needed to improve the

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teaching of minority students. They need external support.

Perhaps the most strongly felt theme in all of these discussions was that a good teacher of minority students is no more and no less than a good teacher. The theme of high standards for all students appears, but is modified to specify that the high standards must be *fairly* applied. Very often in the discussion, it was clear that fairness is seen as making no excuses for minority students. Making no excuses for minority students does not, however, mean denying whatever lacks exist in a specific student's preparation. These teachers want to make sure that their minority students leave the AP class with all the fundamental understandings and skills that perhaps can be assumed in more privileged students. Interestingly, the Calculus teachers especially mentioned the need to improve minority students' oral and written communication skills. Another theme unique to the AP class is the importance of teaching about college. Particularly for students with no family experience of college, the AP teachers interviewed feel the need to provide information and a level of comfort about college, both for the students and their parents. This teaching is necessary in a number of ways. Students and parents both need to understand why a very demanding and severely graded course is worthwhile. In addition, being in the AP class raises all sorts of other questions about college—what will it be like? How will I fit in?

Finally, the teachers spoke of their need for external support. Many of the issues of minority students are outside their control or outside their personal definition of their role. Wade Curry (2000b), former Executive Director of the AP Program, had the following comments after reviewing the report of the focus groups.

“With a tiny staff, the College Board cannot intervene directly with 16,000 school districts and 100,000 AP teachers. However, I imagine that the computer companies faced the same problem in relating directly, not to 16,000 organizations, but to millions of users with complex technical problems. The College Board needs to find ways to establish effective leadership and influence.

1. The first step should be determining what causes strong AP programs.
2. College Board needs to find ways to communicate that information broadly, and use their small staff to the best effect.
3. There are a number of key audiences, including
  - parents
  - school administrators
  - state education departments

- legislators
- businesses

For each audience, College Board needs to consider what is possible in communications as well as what would be desirable—better publications, better policies, effective alliances, communication through organizations, speaking at the right places.

4. There is also a need to advocate directly with these key audiences. While the College Board staff cannot do the work, they need to consider how to encourage others to help and to provide the information needed to support effective advocates.
5. This is the most important issue facing the AP Program.”

### *What We Learned from the Questionnaires*

The teachers who were identified as successful in teaching target minority students tend to come from higher SES schools. Target minority students tend to be a lower proportion in the more successful teacher's AP class than in the less successful teacher's class. The more successful teachers rate themselves as knowledgeable about the AP Program and their AP subject. They rate the student body in general, and the minority students in particular, highly. The principals of successful teachers also tend to rate the academic preparation of the student body, both majority and minority, highly.

Successful teachers were chosen because their target minority students did better than their PSAT/NMSQT scores would have predicted. These teachers' students who were *not* in the target minority also did better than their PSAT/NMSQT scores would suggest. Since the success measure was based only on the performance of target minority students, the performance of the other groups could have turned out better, worse, or the same. The fact that the nontarget students' performance mirrored that of target students provides additional support to the identification of teachers as more and less successful. This is support for the interpretation that the teachers identified as more successful are genuinely better teachers, and that good teaching is effective with all students. It supports the focus groups' conviction that good teachers of minority students are simply good teachers.

Turning to the teachers' academic backgrounds, teaching methods, and curricular emphases, the principal finding of this study is that many of the “best teaching” findings were not confirmed in this study. The

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variables that were not systematically related to success in teaching minority students included:

- Years of teaching overall or years of teaching AP classes
- Academic degrees or certification, including a major in the discipline
- Professional development, including attendance at AP Summer Institutes or Workshops, unless focused on the subject area
- The school's and the teacher's policies in selecting AP teachers, in recruiting and selecting AP students (including special efforts for minority students), or in encouraging students to take the AP Examination

However, relationships were discovered between success and the content and skills emphasized in the AP curriculum. In AP Calculus AB, the series of topics on Integrals is most strongly related to success. A few topics that require *applications* of the curriculum content are also related to minority students' success.

In AP Literature and Composition, the results are clearer for the combined Mexican American and Puerto Rican group than for African American students, and are also clearer for the writing part of the curriculum than for the literature portion. For African American students, the emphases that are associated with success have to do with developing critical reading skills. This is consistent with the comments of one of the focus group members who stated that the fundamental skill for her students is active, critical reading. For Mexican American and Puerto Rican students, the important curricular emphases appear to be the specifics of literary analysis and also the specifics of writing and the overall goal of "developing and organizing ideas in clear, coherent, persuasive language." Like the results for Calculus, in Literature the emphasis most closely related to success is the *application* of knowledge, in this case, in the process of writing.

### *An Issue: Measuring Effectiveness in Enrolling Minority Students*

This study failed to locate a group of teachers who are actively involved in recruiting and encouraging minority students. While the AP teachers studied showed every sign of being enthusiastic and dedicated AP teachers, they appeared to have focused their energy almost exclusively on teaching. Based both on focus group comments and questionnaire results, it is clear that few teachers engage in the vigorous recruiting efforts that (for example) Jaime Escalante did.

However, the focus groups also made it clear that the teacher is more important for minority students than for others. Because more minority students lack a good academic background, it is important that they have good AP teachers.

"...while I agree that it is essential for all teachers to be excellent for all students, some students suffer less as a result of exposure to poor teaching. To clarify, students in some communities can be exposed to a deadbeat teacher, spotty instruction, or even long-term absence from school and still come out fine. The home support may be exposure to a father who just happens to be a professor at Columbia, an at-home library that is a trove, or a social and cultural frame of reference that fills in all of the gaps. Too, there is going to be a school board in place that soon gets rid of the shabby teacher. My kids have no such framework, and so I guess I am saying that it is essential that their teachers' credentials be impeccable. Too, not only do minority kids have to buy into the education itself, but very often, because of various pathologies, they also have to be inculcated into the value and values of education. This requires that they see their teacher as having integrity, and I think we demonstrate this by being models for them. The Caucasian students I have taught have not been in need of this role-model factor in this way. In this one area they are more independent."

Because more minority students are the first in their family to go to college, they may need the mentoring and the information from teachers that their parents cannot supply.

"The only group of parents who could use help are those who are from families with no tradition of going to college and little expectation of such for their children—whether they are minority or not. There are plenty of minority parents here who do an excellent job of developing a desire to learn and do well in their children, but there are others who have told me flat out, 'There is no tradition of attending college in our family—could you encourage my son/daughter.'"

This AP teacher goes on to say that "[p]arents' expectations are CRUCIAL. And it is almost impossible for a teacher to undo 17 years of low expectations...." Nevertheless, if minority students are to break their family's nonacademic tradition, it is difficult to see where they will get the information and encouragement to take AP classes if not from their schools.

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## VIII. Recommendations for Future Research

This study explored a large number of variables that might be related to success in *teaching* AP courses to underrepresented minority students. It appeared to be successful in identifying teaching success, although we suspect that the characteristics of successful teachers could have been more crisply described if appropriate statistical controls for such variables as socioeconomic status and the overall academic climate of the high school could have been added. The study was much less successful in identifying success in *enrolling* minority students, perhaps because it was looking in the wrong place. We were not able to find a group of teachers who are enthusiastic recruiters of minority students. Perhaps success in enrolling minority students is a collaboration of school district policy, principal, and counselor efforts as well as parent and community support. Finding out how to bring minority students into the AP classroom is a crucial issue that needs to be understood.

It was somewhat surprising that so few of the characteristics and behaviors that have been found in the effective teaching literature were important in this study. It must be noted that a number of the effective teaching studies have had much larger samples than this study, comprising all schools in a state or even large national or international sample surveys. It is almost certainly true that teacher effects are difficult to pull out of the complex reality of the educational enterprise and that a powerful study is needed to detect them. However, it is also possible that the AP class, with highly motivated students and enthusiastic teachers, is a different environment with different rules. The two areas most strongly associated with success in teaching minority students in this study were the teacher's rating of the academic quality of the students in his or her school, and the teacher's emphasis on understanding and applying the fundamental concepts of the discipline. These suggest that the key to teaching AP to underrepresented minority students is *academic*. Recalling Treisman's comments about teaching calculus to minority students at Berkeley, the common concerns about poor preparation, poor motivation, and poor thinking skills may not apply well to minority students in AP classes.

Curry's comment that the first step is to determine what makes strong AP programs is clearly supported by this study.

We would suggest that further questionnaire studies of effective teaching in an AP program, similar to this one but with large enough samples to allow statistical

controls, and large enough samples to test the hypotheses generated in this study, are worth doing. In the end, however, identifying successful teaching practices in AP classes will require studies that actually measure outcomes for all students in the AP class, not only their growth in knowledge of the discipline, but also changes in their attitudes toward higher education, the AP subject area, and their own academic competence. Furthermore, studies that observe teacher's interactions with students in the AP classroom will also be necessary to describe successful AP teaching adequately. Probably a different study, casting a broader net to include the school system and the community context, is required to find out successful ways of enrolling minority students in AP courses.

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## APPENDIX

### 1. SCHOOL QUESTIONNAIRE

### 2. AP CALCULUS AB TEACHER QUESTIONNAIRE

### 3. AP ENGLISH LITERATURE AND COMPOSITION TEACHER QUESTIONNAIRE

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# 1. School Questionnaire

## **SCHOOL QUESTIONNAIRE** **Advanced Placement Program® Study**

The College Board Advanced Placement Program is conducting an important study to identify factors that enhance the success of under-represented minority (African American and Hispanic) students in AP® courses. The study is being conducted by Educational Testing Service® (ETS®).

Your school has been identified as serving a significant number of African American and Hispanic students in AP Calculus AB and/or AP English Literature and Composition. In this questionnaire, you will be asked to provide demographic information and information about your school's policies and practices regarding AP courses. **This questionnaire should be completed by the principal or other head administrator.**

Only you can provide information about your school's policies and practices and your answers are very important. **The information you provide is being collected for research purposes only and will be kept strictly confidential. Although you are very busy, we urge you to complete this questionnaire as accurately as possible. Your responses to these questions are needed to help us identify and communicate ways to improve the preparation, recruitment, and instruction of under-represented minority students in AP.**

### **Instructions**

Please complete all parts of the questionnaire and record your answers directly on the questionnaire by providing the information requested as it applies to your school. Please call Barbara Bruschi at (609) 734-5943 ([bbruschi@ets.org](mailto:bbruschi@ets.org)) or Mario Yepes-Baraya at (609) 734-5357 ([myepes@ets.org](mailto:myepes@ets.org)) with any questions.

**The completed School Questionnaire should be included in the packet of surveys being collected by the principal for return to ETS by April 23.**

**THANK YOU VERY MUCH.**

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Name of Person Completing School Questionnaire: \_\_\_\_\_  
Title: \_\_\_\_\_  
Telephone Number: \_\_\_\_\_  
Fax Number: \_\_\_\_\_  
E-Mail address: \_\_\_\_\_

### A. Background Information

A1. How would you describe your school? (Circle one.)

- a. Public
- b. Independent, not religious
- c. Independent, Catholic
- d. Independent, other religious
- e. Home School Association
- f. Charter
- g. Correspondence
- h. Other (Specify): \_\_\_\_\_

A2. Where is your high school located? (Circle one.)

- a. Large city
- b. Medium city
- c. Small city or town
- d. Rural area

A3. What is your total enrollment for this school year?

- a. \_\_\_\_\_ Number of Ninth Graders
- b. \_\_\_\_\_ Number of Tenth Graders
- c. \_\_\_\_\_ Number of Eleventh Graders
- d. \_\_\_\_\_ Number of Twelfth Graders

A4. What percent of students last school year received free or reduced lunch? \_\_\_\_\_ %

A5. What percent of seniors from fall 1997 graduated in spring 1998? \_\_\_\_\_ %

A6. What percent of last year's graduates entered two-year and four-year colleges?

- \_\_\_\_\_ Percent of graduates entering two-year colleges
- \_\_\_\_\_ Percent of graduates entering four-year colleges

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A7. What is the racial/ethnic composition of this year's senior class?

- \_\_\_\_\_ Number of Native American/American Indian students
- \_\_\_\_\_ Number of Asian/Asian American students
- \_\_\_\_\_ Number of Black/African American students
- \_\_\_\_\_ Number of Hispanic students
- \_\_\_\_\_ Number of White students
- \_\_\_\_\_ Number of Other students

A8. What are the special academic entrance requirements for your school, if any? (Circle all that apply).

- a. No special entrance requirements
- b. Test results
- c. Grades
- d. Letters of recommendation
- e. Other (Specify): \_\_\_\_\_

A9. What is the racial/ethnic composition of this year's teaching staff?

- \_\_\_\_\_ Number of Native American/American Indian teachers
- \_\_\_\_\_ Number of Asian/Asian American teachers
- \_\_\_\_\_ Number of Black/African American teachers
- \_\_\_\_\_ Number of Hispanic teachers
- \_\_\_\_\_ Number of White teachers
- \_\_\_\_\_ Number of Other teachers

A10. Please specify the number of teachers who have taught in your school for the number of years indicated.

<b>Number of Years</b>	<b>Number of Teachers</b>
a. 2 years or less	_____
b. 3 to 5 years	_____
c. 6 to 10 years	_____
d. 11 to 24 years	_____
e. 25 years or more	_____

A11. Please indicate how many teachers have Master's or Doctoral degrees in your school.

- \_\_\_\_\_ Number of teachers with Master's Degrees
- \_\_\_\_\_ Number of teachers with Doctoral Degrees

A12. *For the student body as a whole*, how would you characterize each of the following within your school? (Indicate the percent in each category for each letter below.)

	Poor	Average	Good	Excellent
a. <u>Students' academic background upon arrival in high school</u>	%	%	%	%
b. <u>Students' attitude toward academic achievement in general</u>	%	%	%	%
c. <u>Students' regard for school property</u>	%	%	%	%
d. <u>Students' aspirations to attend college</u>	%	%	%	%
e. <u>Academic preparation of students who take AP classes</u>	%	%	%	%
f. <u>Parents' level of education</u>	%	%	%	%
g. <u>Parents' support for student achievement</u>	%	%	%	%
h. <u>Parents' understanding/ support of AP</u>	%	%	%	%
i. <u>Preliminary courses provided by school to prepare students for AP</u>	%	%	%	%

A13. *For African American and Hispanic students*, how would you characterize each of the following within your school? (Indicate the percent in each category for each letter below.)

	Poor	Average	Good	Excellent
a. <u>Students' academic background upon arrival in high school</u>	%	%	%	%
b. <u>Students' attitude toward academic achievement in general</u>	%	%	%	%
c. <u>Students' regard for school property</u>	%	%	%	%
d. <u>Students' aspirations to attend college</u>	%	%	%	%
e. <u>Academic preparation of students who take AP classes</u>	%	%	%	%
f. <u>Parents' level of education</u>	%	%	%	%
g. <u>Parents' support for student achievement</u>	%	%	%	%
h. <u>Parents' understanding/ support of AP</u>	%	%	%	%
i. <u>Preliminary courses provided by school to prepare students for AP</u>	%	%	%	%

## B. Advanced Placement Program

B1. In what year was the AP Program initiated at your school? \_\_\_\_\_

B2. What is the total enrollment this school year in your AP Program? \_\_\_\_\_ (Number)

B3. What percent of students in the AP Program receive free or reduced lunch? \_\_\_\_\_ %

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B4. What are the characteristics of the AP teaching staff in your school this year?

- a. Total # \_\_\_\_\_ of faculty teaching AP English Literature.
- b. Total # \_\_\_\_\_ of faculty teaching AP Calculus AB.
- c. Total # \_\_\_\_\_ faculty teaching in all AP courses.
- d. Race/ethnicity:
  - \_\_\_\_\_ Number of Native American/American Indian AP teachers
  - \_\_\_\_\_ Number of Asian/Asian American AP teachers
  - \_\_\_\_\_ Number of Black/African American AP teachers
  - \_\_\_\_\_ Number of Hispanic AP teachers
  - \_\_\_\_\_ Number of White AP teachers
  - \_\_\_\_\_ Number of Other AP teachers
- e. Gender:
  - \_\_\_\_\_ Number of male AP teachers
  - \_\_\_\_\_ Number of female AP teachers

B5. Please specify the number of AP teachers who have taught in your school for the number of years indicated.

<b>Number of Years</b>	<b>Number of Teachers</b>
a. 2 year or less	_____
b. 3 to 5 years	_____
c. 6 to 10 years	_____
d. 11 to 24 years	_____
e. 25 years or more	_____

B6. Please indicate how many AP teachers have Master's or Doctoral degrees in your school.

\_\_\_\_\_ Number of AP teachers with Master's Degrees  
\_\_\_\_\_ Number of AP teachers with Doctoral Degrees

B7. Which of the following are considered when recruiting new AP teachers? (Circle all that apply.)

- a. Teacher interest
- b. Teacher's schedule availability
- c. Degree in the subject area
- d. Experience in the subject area
- e. Other (Specify): \_\_\_\_\_

- B8. What are the requirements at your school for teachers who teach AP courses?  
(Circle all that apply.)
- a. No special requirements
  - b. Attendance at AP training workshop/institute
  - c. Bachelor's degree in the subject area
  - d. Master's degree in the subject area
  - e. Recent post degree courses in the subject area
  - f. Master's degree in another area
  - g. Experience teaching the subject area
  - h. Teaching ability
  - i. Other (Specify): \_\_\_\_\_
- B9. If you were to expand your AP Program, do you currently have a pool of qualified *prospective AP teachers* from which you could recruit new AP teachers? (Circle one.)
- a. No
  - b. Yes
- B10. What type of support is provided for AP teachers to participate in AP workshops and institutes? (Circle all that apply.)
- |                           |                            |
|---------------------------|----------------------------|
| <b>AP workshop</b>        | <b>AP summer institute</b> |
| a. None                   | f. None                    |
| b. Released time          | g. Released time           |
| c. Fee for workshop       | h. Fee for institute       |
| d. Expenses for workshop  | i. Expenses for institute  |
| e. Other (Specify): _____ | j. Other (Specify): _____  |
- B11. Indicate which, if any, of the following policies, practices or strategies are used at your school to prepare prospective students to succeed in AP? (Circle all that apply.)
- a. No specific preparation
  - b. Students complete a specified course sequence in a given subject matter
  - c. Students complete an honors course(s)
  - d. Students attend preparatory summer workshop or course
  - e. Other (Specify): \_\_\_\_\_
- B12. Students primarily are made aware of AP course offerings and requirements by which of the following? (Circle all that apply.)
- a. No specific provision
  - b. Teacher
  - c. Counselor
  - d. Parent
  - e. Other students
  - f. General announcement/assembly
  - g. Other (Specify): \_\_\_\_\_

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B13. Are there special efforts to make *African American and Hispanic students* aware of the AP course offerings and requirements? (Circle one.)

a. No

b. Yes (Briefly describe): \_\_\_\_\_

\_\_\_\_\_  
Use space at the end of the questionnaire for additional comments.

B14. Parents primarily are made aware of AP course offerings and requirements by which of the following? (Circle all that apply.)

a. No specific provision

b. Teacher

c. Counselor

d. Student

e. Other parents

f. Mailing/newsletter

g. Parents nights/back-to-school nights

h. Other (Specify): \_\_\_\_\_

B15. Are there special efforts to make parents of *African American and Hispanic students* aware of AP course offerings and requirements? (Circle one.)

a. No

b. Yes (Briefly describe): \_\_\_\_\_

\_\_\_\_\_  
Use space at the end of the questionnaire for additional comments.

B16. Are special efforts made to attract or recruit *African American and Hispanic students* to AP courses? (Circle one.)

a. No

b. Yes (Briefly describe): \_\_\_\_\_

\_\_\_\_\_  
Use space at the end of the questionnaire for additional comments.

---

B17. In your school, which of the following are the major factors that consistently help to identify students who will succeed in AP? (Circle all that apply.)

- a. Grades
- b. Teacher recommendations
- c. PSAT scores
- d. Other standardized test scores
- e. Student interest
- f. Parent interest
- g. Previous courses taken
- h. Special honors courses taken
- i. Writing sample
- j. Interview
- k. Other (Specify): \_\_\_\_\_

B18. Specify two of the factors listed above that you consider most important. (Circle two of the letters below.)

a      b      c      d      e      f      g      h      i      j      k

B19. In your school, which of the following are the major factors that consistently help to identify *African American and Hispanic students* who will succeed in AP? (Circle all that apply.)

- a. Grades
- b. Teacher recommendations
- c. PSAT scores
- d. Other standardized test scores
- e. Student interest
- f. Parent interest
- g. Previous courses taken
- h. Special honors courses taken
- i. Writing sample
- j. Interview
- k. Other (Specify): \_\_\_\_\_

B20. Specify two of the factors listed above that you consider most important. (Circle two of the letters below.)

a      b      c      d      e      f      g      h      i      j      k

- 
- B21. Who or what is involved in establishing policy (or practice) for selecting students for AP courses? (Circle all that apply.)
- a. No specific policy
  - b. AP teacher
  - c. Principal
  - d. Other school administrator
  - e. Guidance counselor
  - f. District policy
  - g. School policy
  - h. School practice
  - i. Other (Specify): \_\_\_\_\_
- B22. Who or what is involved in establishing policy (or practice) for selecting *African American and Hispanic students* for AP courses? (Circle all that apply.)
- a. No special policy
  - b. AP teacher
  - c. Principal
  - d. Other school administrator
  - e. Guidance counselor
  - f. District policy
  - g. School policy
  - h. School practice
  - i. Other (Specify): \_\_\_\_\_
- B23. Who is routinely involved in selecting students for AP courses? (Circle all that apply.)
- a. AP teacher
  - b. Other teacher
  - c. Principal
  - d. Other school administrator
  - e. Guidance counselor
  - f. Other (Specify): \_\_\_\_\_
- B24. Which of the following best describes your school's practice regarding students taking the AP examination? (Circle one.)
- a. The teacher/school encourages students likely to get a 3 or higher to take the exam.
  - b. The student decides whether to take the exam.
  - c. All students taking AP courses take the exam.
  - d. Other (Specify): \_\_\_\_\_

B25. What have been the trends in your school over the last three years with regard to *students in general* in AP courses? (Check one box for each letter below.)

**Decreased    Not Changed    Increased**

- |    |   |                          |                          |                          |
|----|---|--------------------------|--------------------------|--------------------------|
| a. | Number of student inquiries about AP courses  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. | Number of students enrolling in AP            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. | Number of students dropping out of AP courses | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

B26. What have been the trends in your school over the last three years with regard to *African American and Hispanic students* in AP courses? (Check one box for each letter below.)

**Decreased    Not Changed    Increased**

- |    |   |                          |                          |                          |
|----|---|--------------------------|--------------------------|--------------------------|
| a. | Number of student inquiries about AP courses  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. | Number of students enrolling in AP            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. | Number of students dropping out of AP courses | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

B27. How important is each of the following student outcomes in terms of your school's goals for students taking AP courses? (Check one box for each letter below.)

**Very Low    Low    Moderate    High    Very High**

- |    |   |                          |                          |                          |                          |                          |
|----|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| a. | Student earns score of 3 or better on the AP Examination  | <input type="checkbox"/> |
| b. | Student experiences college-level work                    | <input type="checkbox"/> |
| c. | Student builds confidence in subject area                 | <input type="checkbox"/> |
| d. | Student becomes more interested in subject area           | <input type="checkbox"/> |
| e. | Student's chances of college admission are improved       | <input type="checkbox"/> |
| f. | Student gains confidence that they can succeed in college | <input type="checkbox"/> |
| g. | Other (Specify):  | <input type="checkbox"/> |

B28. Does the school/district/state pay exam fees to support students taking the AP exam? (Circle one.)

- a. No
- b. Yes, school/district/state pays for all students taking the exam
- c. Yes, school/district/state pays for low-income students taking the exam
- d. Other (Specify): \_\_\_\_\_

B29. How many AP students taking the AP exams last school year received reduced test fees from the AP program?

\_\_\_\_\_ Number of students

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B30. In what ways, if any, do outside organizations or businesses help support your AP program? (Circle all that apply.)

- a. None
- b. Donations/financial contributions
- c. Lecture/guest speaker
- d. Tutoring
- e. Other (Specify): \_\_\_\_\_

Additional Comments:

PLEASE RETURN THE QUESTIONNAIRE IN THE ENVELOPE PROVIDED TO YOUR PRINCIPAL FOR RETURN TO ETS. THANK YOU AGAIN FOR YOUR HELP.

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## 2. AP Calculus AB Teacher Questionnaire

### **TEACHER QUESTIONNAIRE**

**Advanced Placement Program® Study**

**AP® Calculus AB**

The College Board Advanced Placement Program is conducting an important study to identify factors that enhance the success of under-represented minority (African American and Hispanic) students in AP courses. The study is being conducted by Educational Testing Service® (ETS®).

Your school has been identified as serving a significant number of African American and Hispanic students in AP Calculus AB and/or AP English Literature and Composition. We are extremely interested in learning more about the teaching in these courses and about you as the AP teacher. In this questionnaire, you will be asked some background questions and about instruction in your AP classes.

Only you can provide information about the instruction your students receive, and your answers are very important. **The information you provide is being collected for research purposes only and will be kept strictly confidential. Although you are very busy, we urge you to complete this questionnaire as accurately as possible. Your responses to these questions are needed to help us identify and communicate ways to improve preparation, recruitment, and instruction of under-represented minority students in AP.**

### **Instructions**

This questionnaire contains four parts:

- A. Teacher Background Information
- B. Mathematics Preparation
- C. Mathematics Instruction Information
- D. Policies and Practices for AP

**Please complete all parts of the questionnaire and record your answers directly on the questionnaire by providing the information requested as it applies to you/your classes. You will also find class rosters with each student in your school who took the AP Calculus AB exam in 1997 and 1998. Please provide the information requested for your students according to the instructions attached to the roster. Please call Barbara Bruschi at (609) 734-5943 ([bbruschi@ets.org](mailto:bbruschi@ets.org)) or Mario Yepes-Baraya at (609) 734-5357 ([myepes@ets.org](mailto:myepes@ets.org)) with any questions.**

**Please return your completed questionnaire and your class rosters to your PRINCIPAL in the envelope provided. The Principal is collecting all surveys to be returned to ETS by April 23.**

**THANK YOU VERY MUCH.**

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Name (AP Calculus AB Teacher): \_\_\_\_\_  
Phone: \_\_\_\_\_  
E-Mail address: \_\_\_\_\_  
Fax Number: \_\_\_\_\_

### A. Background, Education, and Resources

- A1. What is your gender? (Circle one.)
- a. Male
  - b. Female
- A2. Which best describes you? (Circle one.)
- a. American Indian or Alaskan Native
  - b. Asian or Pacific Islander
  - c. Black/African American (non-Hispanic)
  - d. Hispanic (regardless of race)
  - e. White (non-Hispanic)
  - f. Other (Specify): \_\_\_\_\_
- A3. In which of the following years did you teach AP Calculus AB? (Circle all that apply.)
- a. 1998-99
  - b. 1997-98
  - c. 1996-97
  - d. I no longer teach AP course(s).
- A4. Counting this year, how many years in total (including part-time teaching) have you taught high school mathematics? (Circle one.)
- a. 2 years or less
  - b. 3-5 years
  - c. 6-10 years
  - d. 11-24 years
  - e. 25 years or more
- A5. Counting this year, how many years have you taught AP Calculus AB? (Circle one.)
- a. 2 years or less
  - b. 3-5 years
  - c. 6-10 years
  - d. 11-24 years
  - e. 25 years or more

A6. What type of teaching certificate in mathematics do you have in your state? (Circle one.)

- a. Permanent certificate
- b. Advanced professional certificate
- c. Temporary, provisional, or emergency state certificate
- d. I do not have a certificate in mathematics.
- e. Other (Specify): \_\_\_\_\_

A7. What is the highest academic degree you hold? (Circle one.)

- a. Bachelor's degree
- b. Master's degree
- c. Education specialist or professional diploma based on at least one year's work past master's degree
- d. Doctorate
- e. Professional degree (e.g., M.D., LL.B., J.D., D.D.S.)

A8. When was your most recent degree awarded? (Circle one.)

- a. Within the last year
- b. 2-4 years ago
- c. 5-10 years ago
- d. 11-20 years ago
- e. 21 years ago or more

A9. What were your undergraduate major and minor fields of study? (Check each box that applies.)

	<b>Major</b>	<b>Minor</b>
a. Mathematics, Physical Sciences, Computer Science, or Engineering	<input type="checkbox"/>	<input type="checkbox"/>
b. Mathematics Education	<input type="checkbox"/>	<input type="checkbox"/>
c. Science Education	<input type="checkbox"/>	<input type="checkbox"/>
d. Education (including elementary, secondary, special, bilingual or ESL, counseling)	<input type="checkbox"/>	<input type="checkbox"/>
e. Other area related to teaching mathematics (Specify): _____	<input type="checkbox"/>	<input type="checkbox"/>
f. All other (Specify): _____	<input type="checkbox"/>	<input type="checkbox"/>

---

A10. What were your graduate major fields of study? (Check one box for each graduate degree.)

**Degree 1    Degree 2    Degree 3**

- |  |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|
| a. <u>No graduate level study</u>  | <input type="checkbox"/> |                          |                          |
| b. <u>Mathematics, Physical Sciences,<br/>Computer Sciences or Engineering</u>         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. <u>Mathematics Education</u>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d. <u>Science Education</u>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e. <u>Education (elementary, secondary,<br/>special, bilingual or ESL, counseling)</u> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| f. <u>Other area related to teaching<br/>mathematics (Specify):</u>                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| g. <u>All other (Specify):</u>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

A11. How often do you attend AP workshops? (Circle one.)

- a. Once or twice a year
- b. Every 2 or 3 years
- c. Every 4 or 5 years
- d. Infrequently (6 or more years)
- e. I have never attended an AP workshop.

A12. How often do you attend AP summer institutes? (Circle one.)

- a. Once a year
- b. Every 2 or 3 years
- c. Every 4 or 5 years
- d. Infrequently (6 or more years)
- e. I have never attended an AP summer institute.

A13. When did you last attend an AP summer institute? (Circle one.)

- a. Within the last year
- b. 2 to 4 years ago
- c. 5 years ago or more
- d. I have never attended an AP summer institute.

---

A14. What type of support is provided for you to participate in the following? (Circle all that apply.)

**AP workshop**

- a. None
- b. Released time
- c. Fee for workshop
- d. Expenses for workshops
- e. Other (Specify): \_\_\_\_\_

**AP summer institute**

- f. None
- g. Released time
- h. Fee for institute
- i. Expenses for institute
- j. Other (Specify): \_\_\_\_\_

A15. Which of the following statements is true about the extent to which your school provides you with the instructional materials and other resources you need to teach your AP class(es)? (Circle one.)

- a. I get all the resources that I need.
- b. I get most of the resources that I need.
- c. I get some of the resources that I need.
- d. I don't get any of the resources that I need.

A16. How often do you incur out-of-pocket costs for instructional materials and other resources for your AP class(es)? (Circle one.)

- a. Weekly
- b. Monthly
- c. Three or four times each year
- d. Once or twice each year
- e. Hardly ever or never

A17. Which of the following resource people do you find useful to you in teaching your AP Calculus AB class(es)? (Circle all that apply.)

- a. Other AP teacher(s)
- b. Other teacher(s)
- c. Department chair
- d. Principal
- e. District curriculum specialist
- f. Other (Specify): \_\_\_\_\_
- g. None

- 
- A18. Which, if any, of the following technology do you use in school to prepare to teach your AP class(es)? (Circle all that apply.)
- a. I do not have access to a computer.
  - b. I do not have access to a computer in school.
  - c. E-mail
  - d. AP listserves
  - e. Chatrooms
  - f. Internet/World-wide webs
  - g. Other (Specify): \_\_\_\_\_
  - h. None
- A19. How many school hours per week do you currently have designated as in-school preparation time for your AP class(es)? (Circle one.)
- a. None
  - b. Preparation time for AP class(es) part of overall preparation time
  - c. Less than 1 hour
  - d. 1-2 hours
  - e. 3-4 hours
  - f. 5 hours or more
- A20. How many additional hours do you currently spend outside of school on preparation for your AP class(es) per week? (Circle one.)
- a. None
  - b. Less than 1 hour
  - c. 1-2 hours
  - d. 3-4 hours
  - e. 5 hours or more
- A21. Are you involved in team teaching in your AP course(s)? (Circle one.)
- a. No
  - b. Yes
- A22. Are you involved in joint preparation time with another teacher teaching Calculus in your school? (Circle one.)
- a. No
  - b. Yes

## B. Mathematics Preparation

B1. What level of academic preparation have you had in each of the following mathematics topics or areas? (Check all that apply for each letter below.)

	Little or No Academic Preparation	Part of a College or University Course	One or More College or University Courses	Professional Development Workshops or Seminars
a. <u>College algebra</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. <u>Single variable calculus</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. <u>Multivariable calculus</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. <u>Differential equations</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. <u>Linear algebra</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. <u>Discrete mathematics</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. <u>College geometry/ non-Euclidean geometry</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. <u>Abstract algebra</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. <u>Probability</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. <u>Statistics</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. <u>Introductory real analysis</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. <u>History of mathematics</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B2. During the last three years, what have you done to improve your academic preparation in mathematics? (Circle all that apply.)

- a. No formal workshops or courses
- b. One workshop or seminar
- c. Multiple workshops or seminars
- d. One university course
- e. Multiple university courses

B3. During the last three years, in which of the following areas have you taken courses or participated in professional development activities? (Circle all that apply.)

- a. Use of telecommunications
- b. Use of computers
- c. Use of calculators in secondary school mathematics
- d. Use of computers in secondary school mathematics
- e. Methods of teaching secondary school mathematics
- f. Cooperative group instruction
- g. Interdisciplinary instruction
- h. Teaching higher-order thinking skills
- i. Classroom management and organization
- j. Problem solving in secondary mathematics
- k. Understanding students' thinking about mathematics

(continued on next page)

- l. Testing, student assessment, or evaluation
- m. Portfolio Assessment
- n. Performance-based assessment
- o. Teaching students from different cultural backgrounds
- p. Teaching students who are Limited English Proficient
- q. Teaching students with disabilities
- r. Gender issues in teaching mathematics
- s. Other professional issues (Specify): \_\_\_\_\_
- t. I have not participated in professional development activities or coursework.

B4. What type of support is provided for teachers to participation in **non-AP** workshops or seminars? (Circle all that apply.)

- a. None
- b. Released time
- c. Fee for workshop or seminar
- d. Expenses for workshop or seminar
- e. Other (Specify): \_\_\_\_\_

B5. How prepared did you feel when you *first* started to teach AP Calculus AB course(s)? (Circle one letter for each section below.)

**Knowledge of Subject**

- a. Very well prepared
- b. Well prepared
- c. Somewhat prepared
- d. Not prepared

**Knowledge of AP Program and Exam**

- e. Very well prepared
- f. Well prepared
- g. Somewhat prepared
- h. Not prepared

B6. How prepared do you feel *now* to teach your AP Calculus AB course(s)? (Circle one letter for each section below.)

**Knowledge of Subject**

- a. Very well prepared
- b. Well prepared
- c. Somewhat prepared
- d. Not prepared

**Knowledge of AP Program Exam**

- e. Very well prepared
- f. Well prepared
- g. Somewhat prepared
- h. Not prepared

B7. How closely aligned do you feel the AP Calculus AB curriculum provided by the AP Program is with the curriculum standards used in your department/school/district/state? (Circle one.)

- a. Not aligned
- b. Somewhat aligned
- c. Closely aligned
- d. Very closely aligned
- e. There are no formal curriculum standards.

## C. AP Mathematics Instruction Information

Please answer these questions about the AP Calculus AB class(es) that you teach.

- C1. How many hours of instructional time do you have to present the complete AP Calculus AB curriculum? \_\_\_\_\_ hours per week for \_\_\_\_\_ weeks
- C2. On average, how much time do you expect students in each class to spend on assignments outside of the classroom *per week*? \_\_\_\_\_
- C3. Over the academic year, how much emphasis have you given to each of the following in your AP Calculus AB class(es)? (Check one box for each letter below.)

### Topics

#### Functions:

	Little or No Emphasis	Moderate Emphasis	Heavy Emphasis
a. <u>Analysis of graphs</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. <u>Limits of functions</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. <u>Asymptotic unbounded behavior</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. <u>Continuity as a property of functions</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### Derivatives:

	Little or No Emphasis	Moderate Emphasis	Heavy Emphasis
e. <u>Concept of a derivative</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. <u>Derivative at a point</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. <u>Derivative as a function</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. <u>Second derivatives</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. <u>Applications of derivatives</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. <u>Computation of derivatives</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### Integrals:

	Little or No Emphasis	Moderate Emphasis	Heavy Emphasis
k. <u>Riemann sums</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. <u>Interpretations and properties of definite integrals</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. <u>Applications of integrals</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. <u>Fundamental Theorem of Calculus</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. <u>Techniques of antidifferentiation</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p. <u>Applications of antidifferentiation</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q. <u>Numerical approximations to definite integrals</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Skills:**

	Little or No Emphasis	Moderate Emphasis	Heavy Emphasis
r. <u>Learning mathematical facts and concepts</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s. <u>Learning skills and procedures needed to solve routine problems</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
t. <u>Exploring functions using multiple representations</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
u. <u>Developing reasoning and analytical ability to solve unique problems</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
v. <u>Learning how to communicate ideas in mathematics effectively</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
w. <u>Data exploration and analysis</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
x. <u>Building and applying mathematical models</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C4. In your AP Calculus AB instruction, how often do you do each of the following? (Check one box for each letter below.)

	Never or Hardly Ever	Once or Twice a Month	Once or Twice a Week	Almost Every Day
a. <u>Use mathematical modeling as the principal strategy for learning precalculus material</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. <u>Use problem solving as a means of investigating important mathematical concepts</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. <u>Promote student interaction and discussion using inquiry-based techniques</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. <u>Use students' interests and background experiences to make connections to mathematics</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. <u>Develop students' ability to make connections among mathematical topics</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. <u>Develop students' ability to make connections between mathematics and other disciplines</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. <u>Use the results of classroom assessments to inform instructional decisions</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C5. How often have students in your AP class done each of the following? (Check one box for each letter below.)

	Never or Hardly Ever	Once or Twice a Month	Once or Twice a Week	Almost Every Day
a. Done mathematics problems from their <u>text books</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Done mathematics problems from <u>supplementary materials</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Worked with physical models or <u>manipulatives</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. <u>Used a graphing calculator</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. <u>Used a computer</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. <u>Taken mathematics quizzes or tests</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. <u>Taken some alternative assessment</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Been asked to apply mathematical <u>knowledge to real world situations</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Worked in pairs or small groups <u>to solve mathematical problems</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Written a few sentences about a <u>mathematics problem or its solution</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Presented their mathematical work to <u>the class</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Written reports or done mathematical <u>projects</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C6. In your AP Calculus AB class, how much emphasis do you place on your students doing each of the following? (Check one box for each letter below.)

	Little or No Emphasis	Moderate Emphasis	Heavy Emphasis
a. <u>Working together to make sense of mathematics</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. <u>Taking the initiative to check their work</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Thinking about what a problem means <u>and ways in which it might be solved</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. <u>Inventing and solving their own problems</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. <u>Applying mathematics to real-life problems</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C7. Do you permit students in your AP class(es) to use graphing calculators for quizzes and tests? (Circle one.)

- No
- Yes, for all tests and quizzes
- Yes, for some tests and quizzes

- 
- C8. Which best describes the availability of graphing calculators for use by students in your class(es)? (Circle one.)
- a. No graphing calculators are available.
  - b. One within the classroom
  - c. Fewer than six in the classroom
  - d. A complete class set is available for use by all students.
  - e. Some students have their own graphing calculators.
  - f. Most students have their own graphing calculator.
  - g. All students have their own graphing calculator.
- C9. What is the primary use of graphing calculators in your AP class(es)? (Circle one.)
- a. I do not use graphing calculators for instruction.
  - b. Calculating numerical answers
  - c. Graphing functions
  - d. Spreadsheets or tables
  - e. Statistical graphs
  - f. Symbolic manipulations
  - g. Estimation
- C10. Which best describes the availability of computers for use by students in your class(es)? (Circle one.)
- a. No computers are available.
  - b. One within the classroom
  - c. Two or three within the classroom
  - d. Four or more within the classroom
  - e. Available in a computer laboratory but difficult to access or schedule
  - f. Available in a computer laboratory and easy to access or schedule
  - g. All students have their own computer.
- C11. What is your primary use of computers for mathematical instruction? (Circle one.)
- a. I do not use computers for instruction.
  - b. Calculating numerical answers
  - c. Graphing functions
  - d. Spreadsheets or tables
  - e. Statistical graphs
  - f. Symbolic manipulations
  - g. Estimation

C12. How often do you use each of the following to assess students' progress in your AP Calculus AB class(es)? (Check one box for each letter below.)

	Never or Hardly Ever	Once or Twice a Year	Once or Twice a Month	Once or Twice a Week
a. <u>In-class exams</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. <u>Take-home exams</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. <u>Individual or group projects or presentations</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. <u>Portfolio collections of each student's work</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. <u>Multiple choice tests</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. <u>In-class participation in discussion</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. <u>Problem sets</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. <u>Written solutions and explanations on task sets</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C13. How often do you provide each of the following types of feedback to students? (Check one box for each letter below.)

	Never or Hardly Ever	Monthly	Bi-Weekly	Weekly	Daily
a. <u>Letter grade</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. <u>Written comments</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. <u>Verbal comments</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. <u>Other (Specify):</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C14. How do you communicate students' progress to parents? (Circle all that apply.)

- a. Formal mid-term progress report
- b. Report card
- c. Parent-Teacher conference initiated by teacher
- d. Parent-Teacher conference initiated by parent (or student)
- e. Written note
- f. Phone call
- g. Other (Specify): \_\_\_\_\_

C15. How confident do you feel about each of the following? (Check one box for each letter below.)

	Relatively Little or No Confidence	Somewhat Confident	Very Confident
a. <u>Teaching AP Calculus course skills</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. <u>Communicating AP mathematical content skills to students with different levels of mathematical preparation</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. <u>Using a wide variety of course-related instructional methods</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. <u>Using course-related technology to teach mathematical concepts (e.g., graphing calculators, computers)</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C16. In your opinion, how effective was your AP Calculus AB course in doing each of the following? (Check one box for each letter below.)

	Poor	Fair	Good	Very Good	Excellent
a. <u>Increasing students' general interest and motivation in learning mathematics</u>	<input type="checkbox"/>				
b. <u>Increasing students' verbal communication skills in mathematics</u>	<input type="checkbox"/>				
c. <u>Increasing students' writing skills in mathematics</u>	<input type="checkbox"/>				
d. <u>Preparing students for a college calculus course</u>	<input type="checkbox"/>				
e. <u>Increasing students' confidence in mathematics</u>	<input type="checkbox"/>				
f. <u>Increasing students' confidence about attending college</u>	<input type="checkbox"/>				

### D. Policies and Practices for AP

D1. Which of the following are considered when recruiting new AP teachers? (Circle all that apply.)

- a. Teacher interest
- b. Teacher's schedule availability
- c. Degree in the subject area
- d. Experience in the subject area
- e. Other (Specify): \_\_\_\_\_

D2. Who was involved in your selection to teach AP Calculus AB? (Circle all that apply.)

- a. Principal decision
- b. Teacher initiated
- c. Department chair recommended
- d. Another teacher recommended
- e. Other (Specify): \_\_\_\_\_

D3. *For the student body as a whole*, how would you characterize each of the following within your school? (Indicate the percent in each category for each letter below.)

	Poor	Average	Good	Excellent
a. Students' academic background upon arrival in high school	%	%	%	%
b. Students' attitude toward academic achievement in general	%	%	%	%
c. Students' regard for school property	%	%	%	%
d. Students' aspirations to attend college	%	%	%	%
e. Academic preparation of students who take AP classes	%	%	%	%
f. Parents' level of education	%	%	%	%
g. Parents' support for student achievement	%	%	%	%
h. Parents' understanding/ support of AP	%	%	%	%
i. Preliminary courses provided by school to prepare students for AP	%	%	%	%

D4. *For African American and Hispanic students*, how would you characterize each of the following within your school? (Indicate the percent in each category for each letter below.)

	Poor	Average	Good	Excellent
a. Students' academic background upon arrival in high school	%	%	%	%
b. Students' attitude toward academic achievement in general	%	%	%	%
c. Students' regard for school property	%	%	%	%
d. Students' aspirations to attend college	%	%	%	%
e. Academic preparation of students who take AP classes	%	%	%	%
f. Parents' level of education	%	%	%	%
g. Parents' support for student achievement	%	%	%	%
h. Parents' understanding/ support of AP	%	%	%	%
i. Preliminary courses provided by school to prepare students for AP	%	%	%	%

---

D5. Indicate which, if any, of the following policies, practices or strategies are used at your school to prepare prospective students to succeed in AP. (Circle all that apply.)

- a. No specific preparation
- b. Students complete a specified course sequence in a given subject matter
- c. Students complete an honors course(s)
- d. Students attend preparatory summer workshop or course
- e. Other (Specify): \_\_\_\_\_

D6. How are teachers in your school made aware of AP course offerings and requirements? (Circle all that apply.)

- a. AP teacher(s)
- b. Other teacher(s)
- c. Principal
- d. Formal in-service
- e. Other (Specify): \_\_\_\_\_

D7. About which of the following do you communicate with other teachers teaching 9<sup>th</sup>, 10<sup>th</sup>, and 11<sup>th</sup> grade students? (Circle all that apply.)

- a. AP Program offerings
- b. Student skills necessary for AP Program/courses
- c. Identifying promising students for AP courses
- d. Identifying promising African American and Hispanic students for AP courses
- e. None of the above

D8. How do you make students aware of the AP course offerings? (Circle all that apply.)

- a. Speak with students in my classes
- b. Speak with students in other classes
- c. Speak about the AP Program as part of a student assembly
- d. Speak about the AP Program as part of a parents' back to school night/assembly
- e. Mailings/Newsletters to students
- f. Mailings/Newsletters to parents
- g. Other (Specify): \_\_\_\_\_

D9. Are there any special efforts you use to make *African American and Hispanic students* aware of the AP course offerings and requirements? (Circle one.)

- a. No
- b. Yes (Briefly describe): \_\_\_\_\_

---

Use space at the end of the questionnaire for any additional comments.

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D10. Are there any special efforts you use to attract or recruit *African American and Hispanic students* to AP courses? (Circle one.)

a. No

b. Yes (Briefly describe): \_\_\_\_\_

\_\_\_\_\_

Use space at the end of the questionnaire for any additional comments.

D11. In your experience, which of the following are the major factors that consistently help you to identify students who will succeed in AP Calculus AB? (Circle all that apply.)

a. Grades

b. Teacher recommendations

c. PSAT scores

d. Other standardized test scores

e. Student interest

f. Parent interest

g. Previous courses taken

h. Special honors courses taken

i. Writing sample

j. Interview

k. Other (Specify): \_\_\_\_\_

D12. Specify two of the factors listed above that you consider most important. (Circle two letters below.)

a      b      c      d      e      f      g      h      i      j      k

D13. In your experience, which of the following are the major factors that consistently help you to identify *African American and Hispanic students* who will succeed in AP Calculus AB? (Circle all that apply.)

a. Grades

b. Teacher recommendations

c. PSAT scores

d. Other standardized test scores

e. Student interest

f. Parent interest

g. Previous courses taken

h. Special honors courses taken

i. Writing sample

j. Interview

k. Other (Specify): \_\_\_\_\_

D14. Specify two of the factors listed above that you consider most important. (Circle two letters below.)

a      b      c      d      e      f      g      h      i      j      k

D15. Do you use any special methods to select *African American and Hispanic students* for your AP course(s)? (Circle one.)

a. No

b. Yes (Briefly describe): \_\_\_\_\_

Use space at the end of the questionnaire for additional comments.

D16. What have been the trends over the last three years with regard to *students in general* in your AP Calculus AB class(es)? (Check one box for each letter below.)

**Decreased    Not Changed    Increased**

a. Number of student inquiries about your AP class(es)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Number of students enrolling in your AP class(es)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Number of students dropping out of your AP class(es)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D17. What have been the trends over the last three years with regard to *African American and Hispanic students* in your AP Calculus AB class(es)? (Check one box for each letter below.)

**Decreased    Not Changed    Increased**

a. Number of student inquiries about your AP class(es)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Number of students enrolling in your AP class(es)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Number of students dropping out of your AP class(es)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

---

D18. What, if any, academic support outside of class do you offer to students taking your AP course(s)? (Circle all that apply).

- a. None outside of class time
- b. One-to-one tutoring by AP teacher
- c. Group tutoring by AP Teacher
- d. Tutoring by another mathematics teacher
- e. Peer tutoring
- f. Student study groups
- g. Other (Specify): \_\_\_\_\_

D19. What is done in your class to prepare students for the AP examination? (Circle all that apply.)

- a. Preparation time during regular course work
- b. Complete course work one to two months early and use the remainder of the time for preparation for the exam
- c. Use sample AP exam questions throughout the school year
- d. Administer one or more practice tests before the exam date
- e. Other (Specify): \_\_\_\_\_

D20. Describe any particularly effective strategies you use to motivate *African American and Hispanic* students in your AP class(es).

D21. Describe any intervention strategies you have found particularly effective in helping *African American and Hispanic students* persist in your AP class(es).

D22. Describe any strategies you have found particularly effective in helping *African American and Hispanic students* succeed in your AP class(es).

D23. Which best describes your practice regarding students taking the AP examination? (Circle one)

- a. I encourage those students I feel likely to get a 3 or higher to take the exam.
- b. I leave the decision to the student.
- c. All students in the class take the AP examination.
- d. Other (Specify): \_\_\_\_\_

D24. How important is each of the following student outcomes in terms of your goals for students taking your AP class(es)? (Check one box for each letter below.)

	Very Low	Low	Moderate	High	Very High
a. Student earns a score of 3 or better on the AP examination	<input type="checkbox"/>				
b. Student experiences college-level work	<input type="checkbox"/>				
c. Student builds confidence in subject area	<input type="checkbox"/>				
d. Student becomes more interested in subject area	<input type="checkbox"/>				
e. Student's chances of college admission are improved	<input type="checkbox"/>				
f. Student gains confidence that they can succeed in college	<input type="checkbox"/>				
g. Other (Specify): _____	<input type="checkbox"/>				

D25. Describe any changes you would like to see in your school's policies or practices regarding AP that you feel would improve your effectiveness in teaching *African American and Hispanic students*.

Additional Comments:

**PLEASE RETURN THE QUESTIONNAIRE IN THE ENVELOPE PROVIDED TO YOUR PRINCIPAL FOR RETURN MAILING TO ETS. THANK YOU AGAIN FOR YOUR HELP.**

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### 3. AP English Literature and Composition Teacher Questionnaire

#### **TEACHER QUESTIONNAIRE**

##### **Advanced Placement Program® Study AP® English Literature and Composition**

The College Board Advanced Placement Program is conducting an important study to identify factors that enhance the success of under-represented minority (African American and Hispanic) students in AP courses. The study is being conducted by Educational Testing Service® (ETS®).

Your school has been identified as serving a significant number of African American and Hispanic students in AP Calculus AB and/or AP English Literature and Composition. We are extremely interested in learning more about the teaching in these courses and about you as the AP teacher. In this questionnaire, you will be asked some background questions and about instruction in your AP classes.

Only you can provide information about the instruction your students receive, and your answers are very important. **The information you provide is being collected for research purposes only and will be kept strictly confidential. Although you are very busy, we urge you to complete this questionnaire as accurately as possible. Your responses to these questions are needed to help us identify and communicate ways to improve the preparation, recruitment, and instruction of under-represented minority students in AP.**

#### **Instructions**

This questionnaire contains four parts:

- A. Teacher Background Information
- B. English Literature and Composition Preparation
- C. English Literature and Composition Instruction Information
- D. Policies and Practices for AP

**Please complete all parts of the questionnaire and record your answers directly on the questionnaire by providing the information requested as it applies to you/your classes. You will find class rosters with each student in your school who took the AP English Literature and Composition exam in 1997 and 1998. Please provide the information requested for your students according to the instructions attached to the roster. Please call Barbara Bruschi at (609) 734-5943 ([bbruschi@ets.org](mailto:bbruschi@ets.org)) or Mario Yepes-Baraya at (609) 734-5357 ([myepes@ets.org](mailto:myepes@ets.org)) with any questions.**

**Please return your completed questionnaire and class rosters to your PRINCIPAL in the envelope provided. The Principal is collecting all surveys to be returned to ETS by April 23.**

**THANK YOU VERY MUCH.**

---

Name (AP English Literature Teacher): \_\_\_\_\_  
Phone: \_\_\_\_\_  
E-Mail address: \_\_\_\_\_  
Fax Number: \_\_\_\_\_

### A. Background, Education, and Resources

- A1. What is your gender? (Circle one.)
- a. Male
  - b. Female
- A2. Which best describes you? (Circle one.)
- a. American Indian or Alaskan Native
  - b. Asian or Pacific Islander
  - c. Black/African American (non-Hispanic)
  - d. Hispanic (regardless of race)
  - e. White (non-Hispanic)
  - f. Other (Specify): \_\_\_\_\_
- A3. In which of the following years did you teach AP English Literature and Composition? (Circle all that apply.)
- a. 1998-99
  - b. 1997-98
  - c. 1996-97
  - d. I no longer teach AP course(s).
- A4. Counting this year, how many years in total (including part-time teaching) have you taught high school English? (Circle one.)
- a. 2 years or less
  - b. 3-5 years
  - c. 6-10 years
  - d. 11-24 years
  - e. 25 years or more
- A5. Counting this year, how many years have you taught AP English Literature and Composition? (Circle one.)
- a. 2 years or less
  - b. 3-5 years
  - c. 6-10 years
  - d. 11-24 years
  - e. 25 years or more

A6. What type of teaching certificate in English do you have in your state? (Circle one.)

- a. Permanent certificate
- b. Advanced professional certificate
- c. Temporary, provisional, or emergency state certificate
- d. I do not have a certificate in English.
- e. Other (Specify): \_\_\_\_\_

A7. What is the highest academic degree you hold? (Circle one.)

- a. Bachelor's degree
- b. Master's degree
- c. Education specialist or professional diploma based on at least one year's work past master's degree
- d. Doctorate
- e. Professional degree (e.g., M.D., LL.B., J.D., D.D.S.)

A8. When was your most recent degree awarded? (Circle one.)

- a. Within the last year
- b. 2-4 years ago
- c. 5-10 years ago
- d. 11-20 years ago
- e. 21 years ago or more

A9. What were your undergraduate major and minor fields of study? (Check each box that applies.)

	<b>Major</b>	<b>Minor</b>
a. English (English Language, Literature)	<input type="checkbox"/>	<input type="checkbox"/>
b. English Education	<input type="checkbox"/>	<input type="checkbox"/>
c. Reading and/or Language Arts	<input type="checkbox"/>	<input type="checkbox"/>
d. Education (elementary, secondary, special, bilingual or ESL, counseling)	<input type="checkbox"/>	<input type="checkbox"/>
e. Other area related to teaching		
English (Specify):	<input type="checkbox"/>	<input type="checkbox"/>
f. All other (Specify):	<input type="checkbox"/>	<input type="checkbox"/>

A10. What were your graduate major fields of study? (Check one box for each graduate degree.)

	Degree 1	Degree 2	Degree 3
a. No graduate level study	<input type="checkbox"/>		
b. English (English Language, Literature)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. English Education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Reading and/or Language Arts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Education (elementary, secondary, special, bilingual or ESL, counseling)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Other area related to teaching English (Specify):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. All other (Specify):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A11. How often do you attend AP workshops? (Circle one.)

- a. Once or twice a year
- b. Every 2 or 3 years
- c. Every 4 or 5 years
- d. Infrequently (6 or more years)
- e. I have never attended an AP workshop.

A12. How often do you attend AP summer institutes? (Circle one.)

- a. Once a year
- b. Every 2 or 3 years
- c. Every 4 or 5 years
- d. Infrequently (6 or more years)
- e. I have never attended an AP summer institute.

A13. When did you last attend an AP summer institute? (Circle one).

- a. Within the last year
- b. 2 to 4 years ago
- c. 5 years ago or more
- d. I have never attended an AP summer institute.

A14. What type of support is provided for you to participate in the following? (Circle all that apply.)

**AP workshop**

- a. None
- b. Released time
- c. Fee for workshop
- d. Expenses for workshop
- e. Other (Specify): \_\_\_\_\_

**AP summer institute**

- f. None
- g. Released time
- h. Fee for institute
- i. Expenses for institute
- j. Other (Specify): \_\_\_\_\_

- 
- A15. Which of the following statements is true about the extent to which your school provides you with the instructional materials and other resources you need to teach your AP class(es)? (Circle one.)
- a. I get all the resources that I need.
  - b. I get most of the resources that I need.
  - c. I get some of the resources that I need.
  - d. I don't get any of the resources that I need.
- A16. How often do you incur out-of-pocket costs for instructional materials and other resources for your AP class(es)? (Circle one.)
- a. Weekly
  - b. Monthly
  - c. Three or four times each year
  - d. Once or twice each year
  - e. Hardly ever or never
- A17. Which of the following resource people do you find useful to you in teaching your AP English Literature and Composition class(es)? (Circle all that apply.)
- a. Other AP teacher(s)
  - b. Other teacher(s)
  - c. Department chair
  - d. Principal
  - e. District curriculum specialist
  - f. Other (Specify): \_\_\_\_\_
  - g. None
- A18. Which, if any, of the following technology do you use in school to prepare to teach your AP class(es)? (Circle all that apply.)
- a. I do not have access to a computer.
  - b. I do not have access to a computer in school.
  - c. E-mail
  - d. AP listserves
  - e. Chatrooms
  - f. Internet/Worldwide webs
  - g. Other (Specify): \_\_\_\_\_
  - h. None

- 
- A19. How many school hours per week do you currently have designated as in-school preparation time for your AP class(es)? (Circle one.)
- a. None
  - b. Preparation time for AP class(es) part of overall preparation time
  - c. Less than 1 hour
  - d. 1-2 hours
  - e. 3-4 hours
  - f. 5 hours or more
- A20. How many additional hours do you currently spend outside of school on preparation for your AP class(es) per week? (Circle one.)
- a. None
  - b. Less than 1 hour
  - c. 1-2 hours
  - d. 3-4 hours
  - e. 5 hours or more
- A21. Are you involved in team teaching in your AP course(s)? (Circle one.)
- a. No
  - b. Yes
- A22. Are you involved in joint preparation time with another teacher teaching English Literature and Composition in your school? (Circle one.)
- a. No
  - b. Yes

## B. English Literature and Composition Preparation

B1. What level of academic preparation have you had in each of the following topics or areas? (Check all that apply for each letter below.)

	Little or No Academic Preparation	Part of a College or University Course	One or More College or University Courses	Professional Development Workshops or Seminars
a. <u>Poetry</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. <u>Prose Fiction</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. <u>Drama</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. <u>Public Speaking/ Debate</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. <u>Journalism</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. <u>Expository Writing</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. <u>Creative Writing</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. <u>Fine Arts</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. <u>Cinema/ Film</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. <u>Music</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. <u>Research</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B2. During the last three years, what have you done to improve your academic preparation in English? (Circle all that apply.)

- a. No formal workshops or classes
- b. One workshop or seminar
- c. Multiple workshops or seminars
- d. One university course
- e. Multiple university courses

B3. During the last three years, in which of the following areas have you taken courses or participated in professional development activities? (Circle all that apply.)

- a. Use of telecommunications
- b. Use of computers
- c. Use of computers in teaching English
- d. Methods of teaching English Literature and Composition
- e. Cooperative group instruction
- f. Interdisciplinary instruction
- g. Teaching higher-order thinking skills
- h. Classroom management and organization
- i. Understanding students' conceptual framework for English
- j. Testing, student assessment, or evaluation
- k. Portfolio Assessment
- l. Performance-based assessment
- m. Teaching students from different cultural backgrounds

(Continued on next page)

- n. Teaching students who are Limited English Proficient
- o. Teaching students with disabilities
- p. Gender issues in teaching English Literature and Composition
- q. Other professional issues (Specify): \_\_\_\_\_
- r. I have not participated in professional development activities or coursework.

B4. What type of support is provided for teachers to participate in **non-AP** workshops or seminars? (Circle all that apply.)

- a. None
- b. Released time
- c. Fee for workshop or seminar
- d. Expenses for workshop or seminar
- e. Other (Specify): \_\_\_\_\_

B5. How prepared did you feel when you *first* started to teach AP English Literature and Composition course(s)? (Circle one letter for each section below.)

**Knowledge of Subject**

**Knowledge of AP Program and Exam**

- |                       |                       |
|-----------------------|-----------------------|
| a. Very well prepared | e. Very well prepared |
| b. Well prepared      | f. Well prepared      |
| c. Somewhat prepared  | g. Somewhat prepared  |
| d. Not prepared       | h. Not prepared       |

B6. How prepared do you feel *now* to teach your AP English Literature and Composition course(s)? (Circle one letter for each section below.)

**Knowledge of Subject**

**Knowledge of AP Program and Exam**

- |                       |                       |
|-----------------------|-----------------------|
| a. Very well prepared | e. Very well prepared |
| b. Well prepared      | f. Well prepared      |
| c. Somewhat prepared  | g. Somewhat prepared  |
| d. Not prepared       | h. Not prepared       |

B7. How closely aligned do you feel the AP English Literature and Composition curriculum provided by the AP Program is with the curriculum standards used in your department/school/district/state? (Circle one.)

- a. Not aligned
- b. Somewhat aligned
- c. Closely aligned
- d. Very closely aligned
- e. There are no formal curriculum standards.

## C. AP English Literature and Composition Instruction Information

Please answer these questions about the AP English Literature and Composition class(es) that you teach.

- C1. How many hours of instructional time do you have to present the complete AP English Literature and Composition curriculum? \_\_\_\_\_ hours per week for \_\_\_\_\_ weeks
- C2. On average, how much time do your expect students in each class to spend on assignments outside of the classroom *per week*? \_\_\_\_\_
- C3. Over the academic year, how much emphasis have you given to each of the following in your AP English Literature and Composition class(es)? (Check one box for each letter below.)

### Topics and Skills: Literature

	Little or No Emphasis	Moderate Emphasis	Heavy Emphasis
a. The experience of literature – subjective dimensions of reading and responding to <u>literary works</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. The interpretation of literature - analysis of literary work through close reading to arrive at an understanding of multiple meanings ( <u>textual detail, historical context</u> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. The evaluation of literature - assessment of the quality and artistic achievement of literary works and consideration of their social and <u>cultural value</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Identifying and discussing a work's structure, <u>style, and themes</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Identifying and discussing a work's use of figurative language imagery, symbolism, and <u>tone</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Making careful observations of textual detail, establishing connections among observations and <u>draw from connections</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Developing and organizing ideas in clear, <u>coherent, and persuasive language</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Writing**

	Little or No Emphasis	Moderate Emphasis	Heavy Emphasis
h. Writing to understand a literary work (e.g., writing reaction papers, free writing, reading, journals)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Writing to explain a literary work (e.g., writing brief focused analysis of aspects of language and structure)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Writing to evaluate a literary work (e.g. making and explaining judgments, exploring underlying social and cultural values)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. <u>Using a wide range of vocabulary</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. <u>Using a variety of sentence structure</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. <u>Having a logical organization</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. <u>Balancing generalization with specific illustrative details</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. <u>Effectively using rhetoric</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p. <u>Writing under time constraints</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C4. In your AP English Literature and Composition instruction, how often do you do each of the following? (Check one box for each letter below.)

	Never Or Hardly Ever	Once or Twice a Month	Once or Twice a Week	Almost Every Day
a. Promote student interaction and discussion using inquiry-based techniques	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Use students' interests and background experiences to make connections to literature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Develop students' ability to make connections among literary works	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Develop students' ability to make connections between literature and other disciplines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Use the results of classroom assessments to inform instructional decisions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C5. How often have students in your AP class done each of the following? (Check one box for each letter below.)

	Never Or Hardly Ever	Once or Twice a Month	Once or Twice a Week	Almost Every Day
a. In a whole group with the teacher, discussed, interpreted, and analyzed <u>a novel, short story or poem</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Worked in small groups or pairs <u>to analyze a novel, short story or poem</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. <u>Critiqued and revised their writing</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. <u>Conducted group research projects</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. <u>Conducted individual research projects</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. <u>Presented their work to the class</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. <u>Written expository, analytical or argumentative essays</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C6. How often do you use each of the following to assess students' progress in your AP English Literature and Composition class(es)? (Check one box for each letter below.)

	Never or Hardly Ever	Once or Twice a Year	Once or Twice a Month	Once or Twice a Week
a. <u>In-class essay exams</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. <u>Take-home essay exams</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. <u>Individual or group projects or presentations</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. <u>Portfolio collections of each student's work</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. <u>Multiple choice tests</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. <u>In-class participation in discussion</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. <u>Interpretation or analysis of literary works</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C7. How often do you provide each of the following types of feedback to students? (Check one response for each letter below.)

	Never or Hardly Ever	Monthly	Bi-weekly	Weekly	Daily
a. <u>Letter grade</u>	<input type="checkbox"/>				
b. <u>Written comments</u>	<input type="checkbox"/>				
c. <u>Verbal comments</u>	<input type="checkbox"/>				
d. <u>Other (Specify):</u>	<input type="checkbox"/>				

C8. How do you communicate students' progress to parents? (Circle all that apply.)

- a. Formal mid-term progress report
- b. Report card
- c. Parent-Teacher conference initiated by teacher
- d. Parent-Teacher conference initiated by parent (or student)
- e. Written note
- f. Phone call
- g. Other (Specify): \_\_\_\_\_

C9. How confident do you feel about each of the following? (Check one box for each letter below.)

	Relatively Little or No Confidence	Somewhat Confident	Very Confident
a. Teaching AP English Literature and Composition course skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Communicating AP English skills to students with different levels of academic preparation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Using a wide variety of course-related instructional methods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Using course-related technology (e.g., computers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C10. In your opinion, how effective was your English Literature and Composition course in doing each of the following? (Check one box for each letter below.)

	Poor	Fair	Good	Very Good	Excellent
a. Increasing students' general interest and motivation in learning English	<input type="checkbox"/>				
b. Increasing students' verbal communication skills	<input type="checkbox"/>				
c. Increasing students' writing skills	<input type="checkbox"/>				
d. Improving students' reading comprehension skills	<input type="checkbox"/>				
e. Improving students' analytical reading skills	<input type="checkbox"/>				
f. Preparing students for a college English course	<input type="checkbox"/>				
g. Increasing students' confidence in their English literature and composition skills	<input type="checkbox"/>				
h. Increasing students' confidence about attending college	<input type="checkbox"/>				

## D. Policies and Practices for AP

D1. Which of the following are considered when recruiting new AP teachers? (Circle all that apply.)

- a. Teacher interest
- b. Teacher's schedule availability
- c. Degree in the subject area
- d. Experience in the subject area
- e. Other (Specify): \_\_\_\_\_

D2. Who was involved in your selection to teach AP English? (Circle all that apply.)

- a. Principal decision
- b. Teacher initiated
- c. Department chair recommended
- d. Another teacher recommended
- e. Other (Specify): \_\_\_\_\_

D3. *For the student body as a whole*, how would you characterize each of the following within your school? (Indicate the percent in each category for each letter below.)

	Poor	Average	Good	Excellent
a. Students' academic background upon arrival in high school	%	%	%	%
b. Students' attitude toward academic achievement in general	%	%	%	%
c. Students' regard for school property	%	%	%	%
d. Students' aspirations to attend college	%	%	%	%
e. Academic preparation of students who take AP classes	%	%	%	%
f. Parents' level of education	%	%	%	%
g. Parents' support for student achievement	%	%	%	%
h. Parents' understanding/ support of AP	%	%	%	%
i. Preliminary courses provided by school to prepare students for AP	%	%	%	%

D4. *For African American and Hispanic students*, how would you characterize each of the following within your school? (Check one box for each letter.)

	Poor	Average	Good	Excellent
a. Students' academic background upon arrival in high school	%	%	%	%
b. Students' attitude toward academic achievement in general	%	%	%	%
c. Students' regard for school property	%	%	%	%
d. Students' aspirations to attend college	%	%	%	%
e. Academic preparation of students who take AP classes	%	%	%	%
f. Parents' level of education	%	%	%	%
g. Parents' support for student achievement	%	%	%	%
h. Parents' understanding/ support of AP	%	%	%	%
i. Preliminary courses provided by school to prepare students for AP	%	%	%	%

D5. Indicate which, if any, of the following policies, practices or strategies are used at your school to prepare prospective students to succeed in AP? (Circle all that apply.)

- a. No specific preparation
- b. Students complete a specified course sequence in a given subject matter
- c. Students complete an honors course(s)
- d. Students attend preparatory summer workshop or course
- e. Other (Specify): \_\_\_\_\_

D6. How are teachers in your school made aware of AP course offerings and requirements? (Circle all that apply.)

- a. AP teacher(s)
- b. Other teacher(s)
- c. Principal
- d. Formal in-service
- e. Other (Specify): \_\_\_\_\_

D7. About which of the following do you communicate with other teachers teaching 9<sup>th</sup>, 10<sup>th</sup>, and 11<sup>th</sup> grade students? (Circle all that apply.)

- a. AP Program offerings
- b. Student skills necessary for AP program/courses
- c. Identifying promising students for AP courses
- d. Identifying promising African American and Hispanic students for AP courses
- e. None of the above

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D8. How do you make students aware of the AP course offerings? (Circle all that apply.)

- a. Speak with students in my classes
- b. Speak with students in other classes
- c. Speak about the AP Program as part of a student assembly
- d. Speak about the AP Program as part of a parents' back to school night/assembly
- e. Mailings/Newsletters to students
- f. Mailings/Newsletters to parents
- g. Other (Specify): \_\_\_\_\_

D9. Are there any special efforts you use to make *African American and Hispanic students* aware of AP course offerings and requirements? (Circle one.)

- a. No
- b. Yes (Briefly describe): \_\_\_\_\_

Use space at the end of the questionnaire for additional comments.

D10. Are there any special efforts you use to attract or recruit *African American and Hispanic students* to your AP courses? (Circle one.)

- a. No
- b. Yes (Briefly describe): \_\_\_\_\_

Use space at the end of the questionnaire for any additional comments.

D11. In your experience, which of the following are the major factors that consistently help you to identify students who will succeed in AP English Literature? (Circle all that apply.)

- a. Grades
- b. Teacher recommendations
- c. PSAT scores
- d. Other standardized test scores
- e. Student interest
- f. Parent interest
- g. Previous courses taken
- h. Special honors courses taken
- i. Writing sample
- j. Interview
- k. Other (Specify): \_\_\_\_\_

D12. Specify two of the factors listed above that you consider most important. (Circle two of the letters below.)

a   b   c   d   e   f   g   h   i   j   k

D13. In your experience, which of the following are the major factors that consistently help you to identify *African American and Hispanic students* who will succeed in AP English Literature? (Circle all that apply.)

- a. Grades
- b. Teacher recommendations
- c. PSAT scores
- d. Other standardized test scores
- e. Student interest
- f. Parent interest
- g. Previous courses taken
- h. Special honors courses taken
- i. Writing sample
- j. Interview
- k. Other (Specify): \_\_\_\_\_

D14. Specify two of the factors listed above that you consider most important. (Circle two of the letters below.)

- a      b      c      d      e      f      g      h      i      j      k

D15. Do you use any special methods to select *African American and Hispanic students* for your AP course(s)? (Circle one.)

- a. No
- b. Yes (Briefly describe): \_\_\_\_\_

Use space at the end of the questionnaire for additional comments.

D16. What have been the trends over the last three years with regard to *students in general* in your AP English Literature and Composition class(es)? (Check one box for each letter below.)

	Decreased	Not Changed	Increased
a. Number of student inquiries about your AP class(es)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Number of students enrolling in your AP class(es)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Number of students dropping out of your AP class(es)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D17. What have been the trends over the last three years with regard to *African American and Hispanic students* in your AP English Literature and Composition classes? (Check one box for each letter below.)

	Decreased	Not Changed	Increased
a. Number of student inquiries about your AP class(es)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Number of students enrolling in your AP class(es)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Number of students dropping out of your AP class(es)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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D18. What, if any, academic support outside of class do you offer students taking your AP course? (Circle all that apply).

- a. None outside of the class time
- b. One-to-one tutoring by AP teacher
- c. Group tutoring by AP teacher
- d. Tutoring by another English teacher
- e. Peer tutoring
- f. Student study groups
- g. Other (Specify): \_\_\_\_\_

D19. What is done in your class to prepare students for the AP examination? (Circle all that apply.)

- a. Preparation time during regular course work
- b. Complete course work one to two months early and use the remainder of the time to prepare students for the exam
- c. Use sample AP exam questions throughout the school year
- d. Administer one or more practice tests before the exam date
- e. Other (Specify): \_\_\_\_\_

D20. Describe any particularly effective strategies you use to motivate *African American and Hispanic students* in your AP class(es).

D21. Describe any intervention strategies you have found particularly effective in helping *African American and Hispanic students* persist in your AP class(es).

D22. Describe any strategies you have found particularly effective in helping *African American and Hispanic students* succeed in your AP class(es).

D23. Which best describes your practice regarding students taking the AP examination? (Circle one.)

- a. I encourage those students I feel likely to get a 3 or higher to take the exam.
- b. I leave the decision to the student.
- c. All students in the class take the AP examination.
- d. Other (Specify): \_\_\_\_\_

D24. How important is each of the following student outcomes in terms of your goals for students taking your AP class(es)? (Check one box for each letter below.)

	Very Low	Low	Moderate	High	Very High
a. Student earns a score of 3 or better on the AP examination	<input type="checkbox"/>				
b. Student experiences college-level work	<input type="checkbox"/>				
c. Student builds confidence in subject area	<input type="checkbox"/>				
d. Student becomes more interested in subject area	<input type="checkbox"/>				
e. Student's chances of college admission are improved	<input type="checkbox"/>				
f. Student gains confidence that s/he can succeed in college	<input type="checkbox"/>				
g. Other (Specify): _____	<input type="checkbox"/>				

D25. Describe any changes you would like to see in your school's policies or practices regarding AP that you feel would improve your effectiveness in teaching *African American and Hispanic students*.

Additional Comments:

**PLEASE RETURN THE QUESTIONNAIRE IN THE ENVELOPE PROVIDED TO YOUR PRINCIPAL FOR RETURN MAILING TO ETS. THANK YOU AGAIN FOR YOUR HELP.**

