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Whither Advanced Placement?

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Abstract

This is a review of the Advanced Placement (AP) Program. In disagreement with claims of the College Board, there is firm evidence that the average test performance level has dropped. The College Board's scale and claims for AP qualification disagree seriously with college standards. A majority of tests taken do not qualify. It appears that "advanced placement" is coming closer to "placement." This article recommends that the College Board's policy of concentrating on numbers of participants should be changed to an emphasis on student performance and program quality.

Introduction

In 1953 the College Board began the Advanced Placement (AP) program, to challenge a small, elite group of able students. AP students took a college course in high school and an external exam to qualify for admission to advanced undergraduate work. The strength of AP was its eschewing fads for a solid collaboration between high school teachers and college professors, with an emphasis on subject content. An important

feature was the evaluation of a high school student's work by outside examiners who were college faculty.

Since that time the program has taken on a life of its own and has spread widely throughout American high schools. The number of participants has more than doubled every decade. Today, more than half of American high schools and a third of four year college-bound seniors participate in this burgeoning program. More than a million AP exams, five hundred times the original number, are taken each year.

Whereas overall assessments of American public schools range from highly critical (National Committee on Excellence in Education, 1983, Ravitch, 1985, Finn, 1991) to favorable, even optimistic (Carson et al., 1993, Bracey, 1991-1998), all sides give AP their approval. This shows itself in a growing number of legislatures and state boards which support AP (twenty-three states in 1998, including D.C., College Board, 1998) in a variety of ways. The heart of the AP program is its examination, which is given at the end of the academic year, usually to high school seniors or juniors. Unlike norm referenced examinations, such as SAT and ACT, which are scored in percentiles or equivalent, AP gives criterion referenced examinations, which are pass or fail. The criterion in AP is whether or not the colleges will accept the student for advanced placement. Thus, any critical evaluation of the success of the AP program must hinge on the degree to which the program succeeds in overcoming this hurdle.

The College Board widely quotes its grade scale:

Table 1
Present College Board Interpretation of AP Scores
(approximate grade equivalents in parentheses)

5: extremely well qualified (A)
4: well qualified (B)
3: qualified (C)
2: possibly qualified
1: no recommendation

The College Board (1999a) claimed that,

Almost two-thirds of the students achieved grades of 3 or above on AP's 5-point scale-sufficiently high to qualify for credit and/or enrollment in advanced courses at virtually all four-year colleges and universities, including the most selective.

It is an open secret (Hyser, 1999) that both this claim and scale (Table 1) disagree with college standards. This disparity is a sign of remarkably poor communication between the colleges and the College Board. This paper discusses in detail the seriously misleading conclusions that follow from Table 1.

The Colleges and Advanced Placement

The success of the program is judged by measurable exam *performance*, as opposed to intangible benefits, which are difficult to evaluate objectively (Lichten and Wainer, 2000). The *raison d'être* of the program is qualification for advanced placement by the colleges and universities. To determine college practice, the author uses an enlarged version of the sample of Morgan and Ramist, 1998, but twice as large to include the lower end and make for more representativeness. (See Table 2. The sample may be slightly lenient, since it under-represents small colleges, which sometimes have stricter AP admission policies.)

These colleges and universities divide (by average AP scores) into three classes: "highly selective" (mean AP grade greater than or equal to 3.4, average SAT scores approximately greater than or equal to 610,), "selective" (AP 2.6-3.4, SAT *ca.* 500-610), and "non-selective" (AP \leq 2.6, SAT *ca.* <500). (See Table 2. Sources for SAT or equivalent ACT scores are College Board (1999b) and Princeton Review (1998). AP data is obtained from the Educational Testing Service (ETS).) (Note 1) Then, with 5% dropped (typically colleges with only one AP candidate), the number of exams is 218,359 in highly selective, 519,521 in selective and 67,386 in non-selective schools.

The data in Table 2 differ for each of the three types of colleges. Highly selective schools require a "4" or more, with about three out of five exams qualifying to receive advanced placement. About half of the selective schools take "4's" and half take "3's", with about half of the exams qualifying. Non-selective schools usually accept a "3", but only one out of three exams qualify. Overall, scores of 5s and 4s qualify, 55% of 3s pass, and essentially all 1s and 2s fail, for an average pass rate of 49%. These results obviously disagree with College Board claims (Table 1 and subsequent text), and confirm Hyser (1999).

English Literature seems to have slipped farther than other subjects. Some colleges, not all highly selective, will not even accept a "5" for AP credit. The shift from a "3" to a "4" in selective colleges occurs more often for English Literature than for other subjects (Table 2).

Table 2
Data on AP for a Representative Sample of Colleges

College or University	Ave. Score		% ≥ 3	Number of...		Pass Score	Comments
	SAT	AP		...exams	...candidates		
Non-Selective							
Albany St U.	430	1.3	5.7	87	53	3	
Prairie View A&M U	420	1.54	11.1	81	48	3	
TN State U	460	1.71	16.2	271	166	3	
NC Agricultural Tech St	460	1.92	22.1	299	170	3	

Morgan State U	475	1.95	24.1	162	102	3	
Eastern KY U	455	2.07	28.7	366	190	3	
State U W GA	461	2.13	31.6	275	154	3	
Spelman College	537	2.22	33.2	561	311	3, 4	sci. & Engl. 4
U Southern MS	515	2.29	36.1	418	219	2	
Western KY U	495	2.36	40.3	514	258	3	
U West FL	535	2.36	44.2	240	115	3	
U NC Wilmington	454	2.37	41.8	977	525	3	
U TX Pan Am	NA	2.5	39.7	1282	559	3	
U South FL	545	2.52	45.9	1993	894	3	
U CA Riverside	511	2.55	47.5	4130	1576	3	
Appalachian St U	540	2.59	51.6	1732	802	3	
Selective							
George Mason U	515	2.63	49.4	1328	653	4	
FL State U.	576	2.69	53.2	4836	2030	3	
Auburn U	569	2.74	55.2	1707	836	4	
James Madison	585	2.74	57.5	4016	1631	4	
U. CA Irvine	520	2.77	56.3	8247	2708	4	
Clemson U	557	2.88	60.5	3963	1649	3	
U. CA Davis	565	2.94	62.4	7141	2658	3	
MI State U	540	2.95	62.7	4157	2086	3, 4	English et al 4
Cornell College	600	3.01	62.1	182	70	3	
U. GA Athens	599	3.02	66.1	6029	2493	3, 4	
U. Texas	601	3.08	67.8	14838	5063	3	
PA State U.	593	3.09	67.8	6362	2753	4	
UNC Chapel Hill	610	3.2	71.1	9386	2990	4	English 5
U UT	565	3.28	74.9	3835	1496	3	
Boston College	630	3.28	76	4213	1311	3, 4	
Tulane U	645	3.33	76.7	3002	973	4	

Brigham Young	610	3.35	77.9	10392	3960	3	
Highly Selective							
U. IL Urbana	610	3.42	78.3	10389	3596	4	
College of WM & Mary	655	3.59	83.3	3452	928	4	
U. Virginia	643	3.61	88.3	9488	2351	4	
Carnegie Mellon	641	3.79	87	3310	852	4	English 5
Cornell U.	660	3.81	88.4	9826	2315	4	
Duke U.	685	3.91	89.5	6615	1467	4	
Stanford U.	703	4.13	92.1	8390	1749	4	
Yale U.	730	4.25	94.4	5169	998	4	Engl. 5 (or 4 & 760 SATV, II)

Of all exams that result in advanced placement credit, 32% came from students applying to highly selective colleges, 63% from selective colleges and only 5% from non-selective colleges. Overall college attendance divides approximately into 18% of students at highly selective colleges, 36% at selective institutions and 46% at non-selective schools (based on composite SAT score percentiles furnished by the College Board).

Extreme cases are Yale and the predominantly minority Albany (GA) State U. Applicants forwarding AP exams to Yale's admissions office take an average number of 5.2 AP exams. Three quarters of these 5169 exams (about 3900) from 998 candidates meet Yale's "4" requirement. At Albany State, with a freshman class of 660, 53 AP candidates take 87 exams, of which five are acceptable at a score of 3 or higher. The contrast between these two schools points up the successes and failures of the program.

The College Board Scale

To test the College Board scale (Table 1), assume for the sake of argument that all "qualified" and say half of "possibly qualified" persons merit AP. Then, if one applies Table 1 to the current figures for 1's, 2's, 3's, 4's and 5's (116, 240, 286, 207, and 142 thousands, with 0% ,50%, 100%, 100%, 100% passing, resp.), about $(120+286+207+142)=755$ out of the total of 991 (thousands) or 76% would qualify. Yet less than half of the sample qualified. The College Board scale overestimates the fraction of successful examinations by over a quarter of the total, by no means a trivial amount. In 1999, this would amount to approximately 300,000 examinations incorrectly predicted by the College Board's scale (Table 1). These examinations produce a revenue to C.E.E.B. of over \$20 million and cause an obvious conflict of interest. Table 3 shows a scale, in agreement with Hyser (1999), which drops down by a full step on a five point range, i.e. such that half of the exams with a "3" qualify:

Table 3
A New Scale That Represents AP Data More Accurately
Than the Old Scale of Table 1
(letter grades author's estimates)

5: well qualified (A)
4: qualified (A-, B+)
3: possibly qualified (B or C)
2,1: no recommendation

Under the same assumptions as before, (143+207+142) out of 991 (thousands), or 49%, would qualify. The latter figure agrees quite well with the data. Thus, the old scale (Table 1) is quite misleading and the new scale (Table 3) is a good fit. (Note 2) Note that *a majority of the AP examinations are not passing*. Since about one out three students taking the AP courses never take the examinations, the overall examination pass rate is only about one for every three course enrollments. (Note 3)

The College Board and the Colleges Disagree

The major disagreement between the two grade scales (Tables 1 and 3) shows a yawning gap in communication between CEEB and the colleges. Because the scoring criteria for A.P. are not public information, one can only guess at the causes for the discrepancy between the College Board's claims (Table 1) and the facts of college admissions. CEEB denies that such a discrepancy could reflect any change in quality:

...each exam grade indicates the same level of college-level learning from year to year and state to state. AP provides a true national standard of achievement that is constant over time. We make every effort to protect it from grade inflation. (College Board, 1996).

This claim, coupled with the allegedly consistent success rate, is a chimera for a several reasons. One major cause is apparent to this former college teacher upon inspection of Table 1: the very grade inflation that CEEB assures us does not exist.

The Lira failed to avoid inflation by pegging itself to the Euro, when the value of the Euro dropped. Likewise, AP scores have been pegged to college grades the same way since the beginning of the program in the 1950's, as shown in Table 1. As a person whose teaching career spanned this interval, the author remembers well the changes in grade scales. In the 1950's the average grade in introductory courses at Yale lay midway between a satisfactory "C" and a good "B" (or at 80 on a numerical scale). Today a "C" is unsatisfactory and a "B" is satisfactory in reality; an average grade is midway between B+ and A- (at 90 on the same scale). Grades have gone up similarly in other colleges since AP's birth in 1956. Thus it should be evident from Table 1 that the AP scale would likewise shift by an entire grade, as it has. That the College Board misses this inference is a sign of the lack of contact between it and the colleges.

The constancy of the average pass rate at about 2/3, measured by fraction of scores greater than or equal to 3, is also illusory for a subtle reason, related to Simpson's

paradox. Actually, in most AP tests, the fraction of examinations scoring at 3 or higher is decreasing over the years as the pool of test takers expands and takes in students of lower ability. The overall result appears to be constant because of shifts in test takers towards easier exams.

The number of U.S. History exams at 3 or more has declined to 51% in 1999. On the other hand, in English Literature the percentage of tests with scores of 3 or higher has held up to 68% in 1999. This result reinforces other evidence (see Table 2, comments) for declining grading standards in English Literature *vis a vis* other subjects. However, for both exams only about 40% of test-takers truly qualify for colleges AP. How could the quality of AP exam papers slide downward so badly? An explanation given by three authors, one of whom (Jones) is the present head of the AP program, is that

... over long time intervals test scores are not necessarily comparable, as the entire scale may gradually shift. Changing demographics of the test-taking population must also be considered.... (Pfeiffenberger, Zolandz and Jones, 1991)

Since the number of tests has increased five hundred-fold during the past 45 years, one should not be surprised at such a drift.

Another sign of the CEEB-college gap is the lack of qualified graders. To keep AP's *raison d'être*, one would want at least a majority to be college faculty who teach the subject matter of the AP examinations. Yet, of 556 graders in the 1999 AP U.S. History exam, 316 came from high schools and 60 from community colleges, unaccredited and other non-college sources, or colleges which failed to list their average SAT scores (typically very low-level institutions). Only a minority of 180 came from accredited four year colleges. Likewise, of 619 graders of the English Literature examination for 1996, only a minority of 269 were 4-year college teachers. (Note 4) An unfortunate outcome of this loss of contact is that the AP program seems to have lost its major source of quality, its close collaboration with the colleges.

Mandates

A serious source of disagreement between College Board and higher education faculty is the increasing number of legal restrictions. The colleges view these as micromanagement by unqualified lay persons which endangers the high quality of American higher education. In the words of two former University presidents:

An important reason why American higher education has become pre-eminent in the world is the greater willingness of the government to respect the autonomy of colleges and universities and to refrain from imposing its own judgements on what Justice Felix Frankfurter once described as "the four essential freedoms of a university- to determine for itself on academic grounds who may teach, what may be taught, how it should be taught, and who may be admitted to study." (Bowen and Bok, 1998)

The College Board takes the opposite point of view and welcomes this type of government intervention as an aid to program (and revenue) growth:

Because of the leadership shown by the legislators and educators in these states, the growth in their students' participation in the Program has been truly remarkable.(College Board, 1995)

Examples of State Mandates

Extra credit for AP courses. The state Regents have overridden a vote of the University of California, Berkeley faculty and have mandated that admissions staff give a full grade point extra credit for AP courses (Sahagun and Weiss, 1999). Extra credit towards admissions (in the University of California and others) also is based on *enrollment* in courses with the label "AP," not necessarily on satisfactory exam *performance*. Since the overall examination pass rate is only about one for every three course enrollments, mandating preferential admission to *enrolled* students is questionable.

Paying of examination fees. In the view of college faculty graders, the practice of some states' paying all examination fees indiscriminately encourages unqualified persons (even those who have not taken the AP course) to take a flyer and overloads the system with inferior examinations. As an extreme example, graders tell of examination papers that are totally blank, except for a message saying that the student took AP because of external pressure from parents or school. Since nothing was lost because the fee was prepaid, the student took the path of least resistance and handed in the blank exam.

Requiring that AP courses be given in all high schools. College faculty and deans cast a jaundiced eye on mandatory high school participation, which they view as dragging in schools that are unqualified to handle AP. As pointed out by the author and H. Wainer (2000), there are schools that fail even to produce a single "3" on any AP exams. In corroboration, Table 4 shows that states that pay student fees and require all high schools to offer AP tend to be at the bottom of the list.

Mandating acceptance of AP examinations with a "3" or higher. The College Board's qualification estimates (Table 1), backed by mandates in a growing number of states, would require acceptance into advanced courses of candidates with a score of "3". This would be unacceptable to colleges that no longer honor a "3". If these mandates were accepted, it would rob the colleges of the discretion to place students on the basis of all relevant information, not just a single, obsolete, numerical grade. That AP success could be a self-fulfilling prophecy follows from this scenario:

1. AP is seen as a successful, growing program.
2. The State wishes to improve its educational system.
3. College Board assures AP quality and the value of a "3."
4. On this cue, the State mandates college credit for a "3."
5. Colleges comply; the great majority of examinees get AP credit.
6. Enrollment in AP courses soars.

This scenario is a closed loop that includes the College Board and the State government. Out of the loop are the college faculties. Despite the CEEB's enthusiastic support of these mandates and its growing success in gaining state support, it is safe to predict that the colleges will resist. In the words of Bowen and Bok (1998),

"... it is very difficult to stop people from finding a path toward a goal in which they firmly believe..." and efforts to impose solutions on the colleges are "likely to bring forth ingenious efforts...that can have a wide variety of other consequences, not all of them benign."

University faculty can use a variety of measures to circumvent state mandates on AP. Private universities of course are not bound by governmental rules. State universities have a harder time and do not always succeed, as is shown by UC Berkeley's well-known loss of diversity since affirmative action was voted down. However, state universities preserve quality by granting only elective credit to AP scores of "3." Another strategy, as discussed later in this article, is to place AP students in standard beginning classes, rather than in remedial courses. Nevertheless, the pressure from mandates is on college faculty either to go along and lower quality or to misreport their AP policy. In either case, Table 2 would be incorrect.

Table 4
Advanced Placement Scores by States

State	Number of Tests per 100 grads	Performance		Mandates*
		%=>3	%=>4	
DC	83.7	73.4	49.5	
Missouri	13.6	74.6	44.3	
Connecticut	47.0	72.1	43.8	
Massachusetts	46.7	72.0	43.4	
New Jersey	42.3	70.6	42.7	
Illinois	33.3	72.3	42.7	
Hawaii	34.9	67.2	41.6	
Maryland	48.0	71.5	41.5	
Delaware	40.5	71.2	41.4	
New Hampshire	32.4	70.4	41.3	
California	55.9	65.7	37.5	
Rhode Island	29.8	69.4	37.4	
North Dakota	9.3	72.1	37.2	
Tennessee	24.2	64.7	36.5	
Washington	23.6	68.4	36.5	
Wisconsin	29.6	68.3	36.4	
Iowa	14.2	70.0	36.3	
Montana	17.1	66.9	36.3	
Pennsylvania	27.1	65.7	36.0	
Virginia	56.7	65.6	36.0	C

Louisiana	10.8	63.8	35.3	
Colorado	36.5	66.3	35.2	P
United States	36.6	64.1	35.2	
Utah	63.5	67.6	35.1	
New York	62.4	64.1	35.0	
Oregon	19.9	67.1	34.9	
Ohio	24.5	65.5	34.9	
Wyoming	8.1	63.7	34.8	
Maine	26.1	67.4	34.4	
Kansas	13.7	64.6	34.3	
Michigan	26.8	65.3	34.0	
Vermont	31.6	64.5	33.9	
Idaho	16.2	67.1	33.5	
Arizona	27.5	63.0	33.1	
Georgia	34.0	60.3	32.6	P
Alaska	39.2	63.6	31.3	
North Carolina	42.6	59.9	30.9	
Texas	38.0	57.8	30.8	
Nebraska	12.1	62.7	29.9	
Florida	54.5	56.2	29.5	P
Minnesota	28.6	58.6	29.1	P
New Mexico	21.9	56.1	29.1	
Oklahoma	19.7	58.8	28.9	
South Carolina	44.5	55.1	28.5	C, P
Alabama	21.0	57.3	28.3	
Nevada	31.7	56.0	26.2	
West Virginia	15.7	55.2	24.3	
Kentucky	23.5	50.7	24.2	P
South Dakota	16.5	55.5	24.0	
Arkansas	15.3	52.0	23.9	
Indiana	21.6	50.2	23.4	C, P
Mississippi	14.2	45.5	19.9	

*Mandates: P= State pays fees for all AP examinees
C= All schools required to give AP courses

How AP Actually Performs

The College Board's literature has emphasized the positive aspects of the increase in

numbers of test takers, but has paid less attention to actual *performance* of AP students (College Board, 1994, 1995, 1996, 1998). Consider some data (obtained from ETS) on actual choices made by students in calculus in 14 colleges. One finds the following distribution in Table 5.

Table 5
Actual Placement of Calculus Students in 14 Colleges

AP Score in Calc AB	Percentage taking first calculus course at level shown				
	No Course	Remedial	1st Calc	2nd Calc	3rd Calc
No AP exam	29%	45%	21%	3%	1%
3	24%	17%	37%	22%	2%

Note that the majority of incoming students without an AP background either took no math or enrolled in a remedial course. Also, only a small fraction (22%) of students with a score of 3 ("qualified" in Table 1) actually took an advanced course, although the majority (61%) placed out of the remedial course. This shows that, for scores of "3" and lower, the AP Calculus AB examination is no longer acting as an advanced placement, but more as a placement examination. (Students with a score of "1" or "2" usually are placed in the remedial course. Students with a score of 4 or 5 are likely to take an advanced course.) If one considers the overall performance of all AP students who finished Calculus AB and estimates that *ca. 2/3* actually took the exam, *only a quarter or less achieved advanced placement* in this sample.

Especially in the foreign languages, colleges often use AP exams interchangeably with other criteria, such as SAT I and SAT II scores and even high school credits, to make placement decisions.

AP and Minorities

AP results for minority students are disturbing. (Note 5) The author finds College Board statements on this topic misleading (College Board, 1996; Coley and Casserly, 1992). For example, CEEB cites the movie "Stand and Deliver" on Escalante's success in teaching AP calculus to Hispanic children. However neither Escalante nor his emulators have succeeded in repeating his success with minority students. (Lichten and Wainer, 2000; Mathews 1988, 1997, 1998; Woo, 1998). Furthermore, most of his students took the AP Calculus AB exam, much of which is high school level material.

In the College Board's words (1996),

Woodrow Wilson High School (Washington, D.C.) provides an excellent example of a predominantly minority urban high school with a well established Advanced Placement program that serves a substantial proportion of its students.

In actuality, in 1998, out of a total of 383 AP examinations, 85 were taken by African Americans, of which 18 received a "3" or higher (estimated 6 or 7 for "4" or higher). In its press releases, CEEB often quotes the increased number of minority students taking AP exams, but says nothing about their success rate. Consider the facts on minority AP performance. If a passing grade were 3, 35% of African-American AP

examinations would qualify. A shift to a "4" would lower this to 14%, or one out of seven exams. These results are consistent with PSAT-AP ability-performance relation (Camara, 1997; Lichten and Wainer, 2000). Minority students typically score about one standard deviation (15 I.Q., 6 ACT, or 100 SAT points) below average, which translates into an AP pass rate of about half of that for majority pupils.

In urban school districts, such as Detroit, students in selective high schools perform well on AP exams. On the other hand, the much larger number of pupils at unselective schools do extremely poorly in the AP program. In some, not a single AP candidate passes the exam (Lichten and Wainer, 2000).

In the late 1990's more than 2 million persons graduated each year from high school, of which about 1 million (40%) went to four year colleges. About 400,000 took AP exams (18%). About 200,000 (9%) scored at "3" or higher and approximately 100,000 (4%) scored at "4" or higher. For African-Americans, the corresponding figures were about 250,000 graduates, 75 thousand (30%) to four year colleges, 15,000 (6%) AP exams, 5,000 (2%) passed at "3" or higher (less than 1% at "4" or higher). AP success occurs for a small fraction of high school graduates; for minority students, the fraction is extremely small.

In lawsuits on behalf of African-American, Hispanic and Filipino- American students, six civil rights organizations have charged the University of CA with discriminatory admissions policies. The suits cite the practice of giving extra credit for AP courses to college applicants and the lower availability to minority students of AP courses. (Berthelsen, 1999; Nieves, 1999; Rosenfeld, 1999; Rios, 1999; Sahagun and Weiss, 1999; Daniel *et al. vs. State of CA et al.*, 1999). UC claims to take into account inequality of opportunity for honors/AP students, but state mandates prohibit such discretion (Sahagun and Weiss, 1999). Clearly, admission policies that favor AP participants work against minority pupils. Affirmative action, in which lower test scores for minorities do not exclude them from admissions to selective colleges, is of proven benefit (Bok and Bowen, 1998).

Other Low Performing Groups on AP

Not just minorities are disadvantaged on the AP examinations. Table 4 shows large differences in AP performance among the states. Poor, rural states usually show low AP scores; wealthy, urban states generally do well. Thus, Washington, D.C. is at the top of the table (Note 6); IN does poorly. Preference on college admission to students in AP classes means students from low performing states and schools will be handicapped.

Common Sense and AP

There are few lasting success stories in American Education (Tyack and Cuban, 1995). As effective educational programs spread, the imitations often become less true to the original. A law of diminishing returns sets in as the originally well-qualified (often self-selected), well- informed and highly motivated group of teachers and pupils becomes flooded by the deluge of badly qualified, ill- informed and poorly motivated followers. The program becomes less selective and quality declines.

AP is no exception to the rule. Consider the largest AP program, English Literature. From Haag's (1985) data, the average PSAT-verbal score of test takers in 1982 was an estimated 62 (recentered scale), far above average. By 1997, from Camara's (1997) data, the average had declined 9.5 points to 52.5, which is close to average (approximately 50 for the PSAT), an exceptional loss of selectivity . (The 50% success point for AP English

Literature on the PSAT is 45, well *below* average.) To claim that quality could be maintained in the face of such dilution of the examination taker pool would be incredible. (Other programs, such as U.S. History, have been more selective.)

College introductory courses match the level of average students. Below average students take remedial courses. Only the small minority of above average high school students capable of doing college level work are suited to the AP program. As the AP program expands, it reaches students who are not yet ready to do college-level work. The data confirm common sense: only a minority of students are capable of doing college-level work in advance. Otherwise, standard introductory college courses would be unnecessary.

In confirmation, a survey of K-16 (school and college) students by the Education Trust (1999) showed the high school-college gap. Three quarters of U.S. high school graduates enter some kind of college, but many arrive unprepared. Nearly half take a remedial course, one third fail to make it into the sophomore class, and less than half graduate from college. With few exceptions, national and state standardized tests fail to cover the abilities needed in college. In the Trust's words, it "doesn't make any sense" that the fastest growing courses in high schools are college level (AP) and the biggest growth in college courses has been high school level, remedial courses. (Note 7)

In summary, *the major slide in the qualification scale, the heart of AP, results from lower average student ability.*

Whither AP?

The College Board endorses continuing the expansion rate of AP for the next decade (College Board, 2000). What would be the outcome of this policy? Classical economics says that the decision to increase production hinges on the *marginal rate of return*. Additional production increases profits up to the point of diminishing returns, after which losses outweigh gains. There are also intangible limits on expansion. If a farmer plants to the point that the grain becomes poor in quality, or the land is damaged by erosion, the damage to his/her reputation or land may not show in dollars and cents, but it could be important in the long run.

Likewise, expansion of the AP program reaches diminishing returns, as the marginal yield of pupils qualifying drops (Table 6, last column). In lieu of hard data (CEEB does not keep records of actual number of qualified examinations), this table is based partially on Table 2 (for the year 2000) and information the author could glean from various sources. Table 6 is based on a conservative projection of present trends, such that all selective colleges will no longer accept a "3". Actually, some colleges now require a "5" for AP in some subjects and some give no AP credit for English Literature.

Table 6
Estimated Diminishing Returns in the AP Program

Year	Number of Exams	% qualifying	Qualifying Examinations		Increase in Total Number	% of added number qualifying
			Number	Increase		
1960	15,000	75%	10,000	—	—	—
1970	70,000	75%	50,000	40,000	55,000	75%

1980	150,000	69%	100,000	50,000	80,000	63%
1990	500,000	60%	300,000	200,000	350,000	57%
2000	1,400,000	48%	650,000	350,000	900,000	39%
2010	2,300,000	35%	800,000	150,000	900,000	17%

Table 6 shows how further increases add relatively few qualified examinations. On the other hand, the costs mount in terms of examination fees, training teachers, smaller class sizes, lowered quality of graders and loss of respect for AP. The net benefits diminish to the point that continued expansion of the program does more harm than good. In the opinion of the author, that point was passed long ago.

Conclusions

A fundamental flaw in the AP program follows from the failure to distinguish between *criterion* and *norm referenced* programs. Norm referenced programs, such as SAT or ACT, put students in rank order for convenient sorting. The larger the number of persons taking such a test, the better are the norms.

On the other hand, the colleges' AP criterion is inflexible. As long as AP served a small, elite population chosen from selective schools, increasing the program size had little or no effect on the pass rate or on quality. Now that the level of test takers has dropped below the criterion, the failure rate has increased sharply, and program quality has suffered.

To reestablish quality, major reforms to AP are needed. These include an honest grade scale which is aligned with college standards, removing unwise mandates, and better selection of faculty and students into courses, examinations and grading. (Note 8)

Notes

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1. If colleges were arranged by SAT, rather than by AP scores, the grouping would be slightly different. For example, Spelman College would be listed as selective.
2. This result (actually 26.5%) is robust. For example, if "possibly qualified" meant one quarter of the students passed, the resultant shift would be 27.1%.
3. W. Currie, quoted in Rothschild (1999), estimated about 55% of students enrolled in AP courses take the examinations. The more conservative figure of 2/3 used here changes the fraction of AP enrollees passing the tests to about a third.
4. Community college faculty do not have direct contact with the AP program and the content of AP-level college courses. They and high school teachers usually do not have the advanced education and research experience of college and university faculty.
5. Data for African-American scores in AP tests are from 1998 figures from ETS. The

- present paper does not consider Asian-Americans as "minority."
6. Washington, DC has a higher per capita income than any state. Also the overwhelming majority of AP tests there are taken by students (majority as well as minority) from private schools.
 7. A similar inversion occurs between AP English Literature and SAT II English. The former has average PSAT scores of 52.5 (roughly comparable to senior SAT scores of 540); the latter has average SAT scores of 568 (College Board, 1997). Students taking the AP exam have lower verbal ability than those who take the high school exam.
 8. The College Board (2000) recently announced plans to put ten AP courses in every high school in the country by the year 2010 and expand the program to over 2 million examinations. This move, if it ever became real, would exacerbate the problems of the program: bloated size, ill-qualified faculty and students, and growing failure rates, especially among minorities. Calculus BC is the exception that proves the rule about AP. This small program (31,000 exams in 1999) is still a success by all measures. Colleges still accept a "3" for AP, the pass rate is very high (79%), yet the student ability distribution on the PSAT is no higher than for calculus AB (Camara et al, 1997). The success of BC may be due to the same features of AP in its early days: self-selected, able, well-motivated faculty and students.

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