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# A Portrait of Advanced Placement Teachers' Practices

**Pamela L. Paek, Eva Ponte, Irv Sigel,  
Henry Braun, and Don Powers**

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Pamela L. Paek is a psychometrician at Pearson Educational Measurement.

Eva Ponte is an associate research specialist at the University of California, Berkeley.

Irv Sigel is a senior associate at Educational Testing Service.

Henry Braun is a distinguished presidential appointee at Educational Testing Service.

Don Powers is a principal research scientist at Educational Testing Service.

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# Introduction

The Advanced Placement Program® (AP®) is dedicated to providing high school students opportunities to enroll in college-level courses while in high school. The advantages of such accelerated opportunities are both financial and educational. The educational advantage is the platform provided by these courses for students to engage in challenging course work, which usually serves the needs of talented and gifted students. The financial rewards refer to the time and funds students can save when AP courses are accepted by colleges as satisfying requirements for entry college-level courses: college tuition costs tend to be reduced since graduation requirements can be fulfilled in a shorter period of time. These advantages can only be realized if the courses are taught at a level commensurate with the college standards and if the students are motivated to perform to meet the AP course standards. Achievement of those standards is primarily determined by student performance in the Advanced Placement Exam, which takes place at the completion of course work.

The AP Program is available internationally. As a result of its widespread availability, considerable effort is invested in defining course content (so that most colleges will give credit for taking AP courses), in providing curriculum materials that can be consistently implemented nationwide, and in constructing valid and reliable year-end assessments. The pivotal person in this complex enterprise is the teacher, yet there has been no comprehensive survey of how teachers organize and administer their daily lives in order to accomplish the goals of the AP Program.<sup>1</sup>

Given the importance of teaching practices in terms of the success of the AP Program, the purpose of this study was twofold: first, to create surveys in order to gather information about the teaching practices of AP Biology and AP U.S. History teachers; and second, on the basis of the data gathered using these surveys, to document differences among AP teachers in both Biology and U.S. History with respect to instructional practices. To address these goals, we conducted a literature review to select relevant aspects of teaching practices, created surveys that were reviewed by several parties, and collected information about teacher practices by administering these surveys to a large, representative sample of AP Biology and U.S. History teachers. These data provided the basis for creating a range of descriptions of AP teachers' practices.

In this study, we (1) developed and pilot tested an instrument that could be used to document the practices of AP teachers; (2) systematically sampled AP teachers; (3) administered the final instrument to sampled teachers; and (4) summarized the responses for each of the two subject areas. Data were analyzed at the teacher level, separately

for each of the two subject areas. Although there are a number of courses in the AP Program, we selected two that may reflect strikingly different approaches in content: Biology and U.S. History. AP Biology has a very broad and dynamic curriculum that poses many pedagogical challenges, while U.S. History has a well-established curriculum and an innovative assessment structure.

The description of teacher practices can benefit the AP Program in two ways. First, by providing an assessment of teacher needs, it can, we believe, help the AP Program to target its professional development services. In addition, the AP Program will be able to identify effective teacher practices that are underutilized by AP teachers, and thus offer professional development that supports those practices. Second, the description of teacher practices can serve as a baseline for the evaluation of professional development services and other AP Program interventions to improve such practices. Without knowing the nature of current practices, it is difficult to know how they may change following any intervention. In addition to being of assistance to the AP Program, the description of teacher practices can directly assist AP teachers. Teachers can use the information from the study to compare their practices to those of their colleagues, discussing which of their own practices are typical of AP teachers as a whole, or typical of teachers at peer institutions.

This report is organized in the following way. We first present the theoretical framework that guided the development of the survey. We then introduce the methodology of the study, discussing data gathering methods, sampling, survey construction, and strategies used for data analysis. Having set the stage for the study, we then discuss the results of the analysis of the survey responses, first for the close-ended questions for AP Biology and AP U.S. History, and then for the overall results to provide the reader with an overarching view of our findings.

## Theoretical Framework

Having discussed the importance of teachers in ensuring students' college preparation, and given the complexity of the teachers' role—including the many tasks required in the course of a day's work—research on teaching provides a framework for organizing the study. It should also be noted that our study focuses on a distinctive teaching milieu: (1) the course content is unique to AP programs, in that it is more comprehensive and detailed than the usual high school course in the same subject area; and (2) students are assessed through a national high-

<sup>1</sup> We should note, however, the existence of a comprehensive study of AP teacher characteristics, conducted by Milewski and Gillie (2002) that provides a comprehensive portrait of the characteristics of AP teachers with some information about teaching practices. Our study differs from theirs in that, even though we do gather data about teacher characteristics, our focus is on teacher practices rather than characteristics.

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stakes exam. These factors create a unique environment that has not usually been the focus of research on teaching. By undertaking a survey of practices (instead of an experimental study), our contribution is to provide descriptions of teacher practices in this environment and to pose questions to be answered, rather than to confirm hypotheses.

Research on teaching continues to grow, as evidenced for example by a significant increase in the number of articles from the third to the fourth edition of the *American Educational Research Association's Handbook of Research on Teaching*. One important area of this research focuses on factors that influence a teacher's effectiveness, as determined by the performance of his or her students. Based on this research, we selected those factors that we deemed most relevant in AP Biology and U.S. History courses (and which were measurable through a survey), and we created a model of teaching practices that served as the basis for the creation of the surveys. The model and the literature from which the model was formulated are presented in the following sections.

## **Factors Affecting Teachers' Practices**

Researchers have shown that there is no single factor that determines teacher effectiveness. Rather, numerous factors govern how successful teachers approach the challenges of teaching (Darling-Hammond, 2002; Porter and Brophy, 1998; Wenglinsky, 2002). A number of such factors are especially prominent in the research literature on teaching, and it is primarily on these factors that we based the design of our survey instrument. These factors include: (1) substantive expertise and training, (2) school context, (3) classroom context, (4) instructional and assessment practices, and (5) content coverage. In addition to these general factors, our view of teaching practices also incorporates one factor that is specifically relevant for this AP study: AP Exam preparation practices. The first three factors are considered context related (expertise and training, school context, and classroom context) and are presented first. These are then followed by teaching practice, which incorporates instructional, assessment, content coverage, and AP Exam preparation practices.

### **Substantive Expertise and Training**

This factor refers to the teacher's familiarity with both the substantive content of the course and the instructional techniques most appropriate for conveying this content. This factor is, in turn, a product of numerous variables, such as the educational background of the teacher, previous experience teaching courses in the discipline (AP and otherwise), and the teacher's ongoing professional

development through workshops, institutes, university classes, and seminars. Presented in this light, professional development may refer both to further exposure to substantive course content and to experiences that bolster content-specific pedagogy.

Teachers' training and expertise have been found to have a significant effect on the quality of teachers' practices. Researchers (Darling-Hammond, 2000; Ferguson and Womack, 1993; Floden, 2001) have found that teacher qualifications (i.e., as reflected by licensing examination scores, education, and experience) have a large influence on student achievement at the district level. In addition, other researchers such as Greenwald, Hedges, and Laine (1996) and Goldhaber and Brewer (2000) have found that, when controlling for other elements, teacher education, ability, and experience are associated with increases in student achievement across schools and districts. Moreover, a study of high- and low-achieving schools with similar student populations in New York City found that differences in teacher qualifications accounted for more than 90 percent of the variation in student achievement in reading and mathematics at all grade levels tested (Armour-Thomas, Clay, Domanico, Bruno, and Allen, 1989).

More specifically, several studies have found that course taking has a strong relationship to subsequent teaching performance (Darling-Hammond, 2001; Haney, Madaus, and Kreitzer, 1986; Monk, 1994). Furthermore, knowledge about teaching and learning shows even stronger relationships with teaching effectiveness than does subject matter knowledge (Darling-Hammond, 2000; 2001; Darling-Hammond and Aneess, 1996; Ferguson and Womack, 1993; Guyton and Farokhi, 1987; Monk, 1994).

Teachers' knowledge about the subject matter and about teaching and learning is related to two factors that we introduce next: teachers' years of experience and their participation in professional development activities. Researchers (e.g., Darling-Hammond, 2001; Murnane and Phillips, 1991) have found a positive relationship between teachers' effectiveness and their years of experience. For instance, teachers who have taught for less than three years tend to be less effective than more senior teachers. This relationship, however, is usually nonlinear. That is, the benefits of experience tend to diminish after about five years (Darling-Hammond, 2001). However, veteran teachers who continue to participate in good-quality professional development activities continue to improve their performance (albeit at a slower rate).

Professional development is currently seen in the educational arena as a key tool to improving teaching and learning in our schools. As Little (1989) states, "preservice teacher education cannot fully satisfy the requirements for a well-prepared work force" (p.165). Thus, most teachers participate in in-service training programs throughout

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their careers. There seems to be some agreement about the characteristics of good professional development programs. Effective professional development programs should be schoolwide; be long-term with follow-up; encourage collegiality; foster agreement among participants on goals and vision; have a supportive administration; have access to adequate funds; develop buy-in among participants; acknowledge participants' existing beliefs and practices; and make use of outside facilitators (Richardson, 2003). Professional development programs that have some or all of these characteristics have been found to have a positive influence on teachers' practices and student achievement (Fennema, Carpenter, and Franke, 1996; Kennedy, 1998; Weiss, Montgomery, Ridgeway, and Bond, 1998). In their study of effective professional development programs, Garet, Porter, Desimone, Birman, and Yoon (2001) report that three core features of professional development have significant positive effects on teachers' knowledge, skills, and classroom practices: focus on content knowledge (activities centered on academic subject matter), opportunities for active learning ("hands-on" experiences that are integrated into the daily life of the school), and coherence with other learning activities (activities that are consistent with the rest of the curriculum used by teachers). In addition, they indicate that duration is a key element of effective professional development programs (i.e., sustained and intensive professional development is more likely to have an impact).

Inasmuch as AP courses have a particular profile, teachers are encouraged to participate in AP-specific professional development activities. One goal of this study is to determine which of these practices are connected to higher student achievement.

## School Context

Educational activities are influenced by the context in which they take place (Boyd, 1992; Goffman, 1974). Insofar as school context may moderate the efficacy of instructional practices, understanding its nature is an essential step in establishing links between teacher practice and student achievement.

The most frequently studied contextual variable has been the structure and organization of schools. Lee, Smith, and Croninger (1995) found that changes in school structure lead to good practice and improved student outcomes. Ancess (2000) confirmed these findings and also suggested that the relationship between school context and teachers is reciprocal. That is, changes in the school context may bring changes in teaching practices and vice versa.

In this report, we adopt the definition of context as "any of the diverse and multiple environments or conditions that intersect with the work of teachers and teaching" (Talbert, McLaughlin, and Rowan, 1993).

To help us better understand all these conditions, we conceptualize two overarching categories of school context: a cultural and a material one. In the first case, we consider the school professional network, schedules, and size. In the second case, we include resources and physical structures. Next, we discuss each of these categories of school context.

Findings from research on effective schools suggest that schools that score relatively high on dimensions of community organization are also generally high on measures of student academic achievement, participation, and retention (Bryk and Thum, 1989; McLaughlin and Talbert, 2001). Underlying community organization are various norms having to do with inquiry, collegiality, shared vision, improvement, and involvement in decision making. Next, we discuss these norms and how they interact to create an effective school environment.

Norms of inquiry and collegiality, as well as a shared purpose or vision of the school, are all essential in creating schools conducive to sustaining high-quality teaching and facilitating learning (Honig, Kahne, and McLaughlin, 2001). Inquiry can take place only when the culture of the school allows for experimentation, criticism, and invention (Sarason, 1982). Inquiry-supportive schools create a context in which teachers can dedicate sufficient time to plan jointly, and participate in the design of curricula, materials, and assessments (Lieberman, 1996). The plans, curricula, and assessments created by teachers in a cooperative way tend to be effective when teachers share their views of what is to be accomplished and how (Nanus, 1992). In fact, researchers have found that sharing a common vision is key for school improvement (Miles and Louis, 1990; Schlechty and Cole, 1991).

Establishing an environment in which teachers work cooperatively and share common goals is a first step toward creating an effective school. In addition to the norms of collaborative inquiry, there must be a school philosophy of continuous improvement. One component of this improvement philosophy is in-service professional development. Other elements are clear information and consistent, sustained effort by schools (Fullan, 1991; Patterson, Purkey and Parker, 1986).

For improvement toward a common goal to take place, it is important that all school staff be involved in the decision-making process. Involvement in making decisions is a norm that has been found to be key to creating successful school contexts (Hargreaves, 1996; Sarason, 1982). Involvement not only gives teachers a sense of ownership in school processes, but also encourages teachers to take responsibility for the school's performance (Feiman-Nemser and Floden, 1986; Sarason, 1982).

Such norms establish a set of rules for schools to function. In addition, the organization of schools exerts a pervasive influence on the thinking of those who work and study in them (Spady, 1988). We define organization



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in terms of the school calendar and the duration and scheduling of class sessions. Darling-Hammond and Anness (1996) found that the ways in which schools structure schedules and interactions among staff and students were essential to the success of new assessment practices. These researchers indicated that the most effective organization is one with flexible schedules that provide ample time for teachers to interact with students on an individual basis and with calendars that are aligned with important educational events (e.g., high-stakes testing and graduation exams).

The norms and organization of the school may vary depending on its size, as well as other aspects of the school. Several researchers have found that school size is a characteristic that not only affects the physical aspects of the school experience, but also the kinds of interactions among teachers and students. Schools with small class sizes tend to promote student participation, satisfaction, attendance, and ability to identify with the school and its activities (Fowler and Walberg, 1991; Shepard, 2001). That is, small-sized classes tend to create a sense of community, which appears to result in reduced dropout rates and absenteeism (Meier, 1995; Pittman and Haughwout, 1987), as well as higher college entrance rates. Size also has an influence on the curriculum offering of the schools. For example, Monk's (1986) study concludes that high school enrollments of 400 or fewer students affords schools the opportunity to provide more specialized teacher assignments.

Finally, we address the quantity and quality of the materials and resources provided by the school. Greenwald et al. (1996) have shown this to be an essential feature in supporting teachers' teaching practices. More specifically, we address the availability of resources that are considered either necessary or advantageous to teaching the AP course, such as the number of computers that are available. Researchers have found that the progress of many students has been hampered by inequitable access to computers, both within and across schools (Sayers, 1995).

### **Classroom Context**

We define the classroom context as the qualities of the classroom participants (students and teacher) and the participant structures (Philips, 1972) that result from them. Our focus is on several student characteristics that are related to performance on AP Exams. First, students' preparation prior to taking AP classes was significantly related to students' performance on the AP Exam (Camara, 1997; Camara and Millsap, 1998). These researchers present two indicators that measure the degree to which students are prepared and that correlate with students' AP scores. One indicator is the criteria used by schools to select AP students. Another indicator

is students' performance on relevant tests—such as the PSAT/NMSQT®—and the grades accumulated in prior years. Second, classroom size not only determines the teachers' workload, but also influences the quantity and quality of student-teacher interactions (Darling-Hammond, 2000; Haenn, 2002), thus mediating the effectiveness of teachers' practices.

## **Teaching Practices**

Having presented the factors that affect teacher practices, we will now proceed to discuss the specific elements of such practices. Teaching practices are difficult to categorize, since the elements that integrate those practices tend to overlap. For our purposes, teaching practices are comprised of three factors: instruction and assessment practices, content-coverage, and AP Exam practices. It is through these factors that we aim to develop a tool to measure teaching practices.

### **Instructional and Assessment Practices**

This factor refers generally to the teacher's pedagogical practices, with instructional delivery and student engagement being key components. The types of assessments and feedback are also key, as they help foster their relationship with the types of learning the teacher emphasizes. Together, they create a portrait of teacher expectations and teaching style (Black and Wiliam, 1998; Danielson, 1996).

To be effective, instructional delivery methods must be consistent with current notions of how people learn (Leinhardt, 2001; Wolf, Bixby, Glenn, and Gardner, 1991). Traditional (behaviorist) views of learning have been partially supplanted by constructivist strategies. Both approaches include methods that are effective in teaching certain aspects of the curriculum. Successful teachers are those who can use a broad range of instructional strategies in response to specific students needs (Darling-Hammond, 2000). Thus, we expect effective teachers to use both traditional as well as constructivist strategies. Flexibility in instructional delivery usually requires mastery of, and a degree of comfort with, subject matter content. Teachers who can vary their type of instruction tend to engage more students, thus facilitating student success (Emmer et al., 1997; Evertson, 1995).

The traditionalist approach typically results in a teacher-centered classroom. The teacher is the active agent who lectures and demonstrates the lesson, while students act primarily as passive learners (Anderson and Block, 1987; Lindsley, 1992; Wilson, 1999). This teaching style tends to be prescribed in its structure in delivering a certain quantity and type of information; however, it has been shown to be effective in classrooms when certain goals (e.g., acquisition of a large number of facts) are sought, as well as in gifted classrooms (Lumsdaine, 1996/1964;

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Wilson, 1999). However, one of the downfalls of this approach is that there is usually little if any opportunity to adapt instruction to individual student needs.

The constructivist approach is built on the notion that students need to be active learners in order to attain a deep understanding of the subject matter under study (Rogoff, 1990; Shepard, 2001). To become active learners, there must be high student engagement, with students taking a central role within the participant structure of the classroom (Ellet, 1990; Philips, 1972; Shepard, 2001). Therefore, classrooms must be student-centered. Unlike the traditional style of lecture, the constructivist approach focuses on hands-on collaborative activities with students. Teachers who bring student ideas into play, implement problem-solving activities, and ask higher-order questions usually create more effective environments for learning, because students are more actively engaged in learning (Phillips, 1995). In this model, the teacher acts as a facilitator of students' learning (Brandt, 1992; Danielson, 1996; 1998; Heckman, 1994). Through integration of more student-centered activities, studies have shown that students become more successful, as they are able to employ their own learning styles in acquiring new information (Brown and Campione, 1994; 1996).

The types of in-class and out-of-class assignments used by teachers are also indicative of the types of learning that teachers emphasize and, possibly, of the effectiveness of their instructional approaches. Traditionalists tend to teach facts and concepts and assume that students integrate that knowledge independently. They rely heavily on drill and practice, as seen in the case of Japanese students' mastery of mathematics (Stigler, Fernandez, and Yoshida, 1996). The traditionalist approach prescribes a format for students to follow, so students know exactly how they are expected to analyze information to support their claims (Kohn, 1997; Lumsdaine, 1996/1964; Wilson, 1999). In most cases, new information is taught in discrete pieces: facts are memorized and then the structure for developing a claim is taught separately (Wilson, 1999).

Constructivists tend to integrate several types of learning: facts and concepts are usually embedded in learning how to synthesize that information (Cohen, 2000; Sykes and Bird, 1992). In general, constructivist approaches more often call for hands-on activities and student participation in projects (Barron, Schwartz, Vye, Moore, Petrosino, Zech, and Bransford, 1998; Brown and Campione, 1994).

As is the case with instructional strategies and assignments, teachers' use of assessment and feedback techniques reflect their views of both appropriate pedagogy and how students learn. Behaviorist approaches to learning tend to consider assessment as a tool to measure how much information students have acquired (Resnick and Resnick, 1992; Shepard,

2001). As such, assessment is usually seen as an external activity aimed at grading and sorting students in relation to their acquisition of a specific set of facts and knowledge (Gitomer and Duschl, 1995; Shepard, 2001). Assessment is usually structured in a closed format, since the underlying assumption is that there is a clear set of knowledge goals that students ought to master by a certain point in time.

In contrast, constructivists view assessment as a tool that should inform both student learning and teacher practices (Darling-Hammond and Ancess, 1996). To achieve this goal, assessment is seen not as an external event, but as an embedded classroom activity that is systematically and continuously included in classroom procedures (Shepard, 2001). The artifacts used to measure student learning are based on the context in which learning takes place, and thus they may include slight variations from one student to another: students' learning is viewed and assessed as the result of their individual engagement and experience (Mislevy, 1995; Phillips, 1995; Shepard, 2001).

Because traditional approaches tend to use multiple-choice exams, the amount of information they provide can be limited as to whether a student response was correct or not (Gitomer and Duschl, 1995). This type of feedback may be useful for certain situations. Constructivist approaches generate more elaborated feedback, which provides specific evidence of quality of performance, gives information to students and teachers about the progress being made, and uses descriptive language that can be utilized by the teacher to plan instruction accordingly and by the student to improve learning through self-assessment and self-adjustment (Wiggins, 1998).

## **Content Coverage Practices**

This factor refers to the extent to which the content of the course is addressed during the school year. There are two main approaches to dealing with content coverage: treating a broad range of topics rather lightly or addressing fewer topics in greater depth. Those who stress the lower end of Bloom's taxonomy (Bloom, 1956) tend to cover a significant amount of material but usually at a relatively superficial level, while those at the higher end of that taxonomy tend to spend more time on integrative in-depth analyses of many fewer topics through essays, independent studies, or long-term projects (Allington, 1991). Because the AP curriculum includes a large list of topics and the expectations of mastery are high, coverage strategies are a challenge to AP teachers. Given the nature of the AP curriculum and findings from research regarding breadth versus depth of content coverage (and alternatives for dealing with coverage), we believe that teachers who strike an appropriate balance between depth and breadth of content coverage will be the most effective ones in facilitating successful performance on AP Exams. This balance remains to be determined.

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## AP® Exam Preparation Practices

This factor refers to the activities the teacher uses in preparation for a high-stakes test, or more specifically, the AP Exams. It addresses instructional decisions both inside and outside of the classroom, such as whether to offer after-school review sessions, or to provide students with AP practice tests to familiarize students with the AP Exam.

High-stakes tests are those whose results are critical for students (e.g., tests used to certify, classify, or select students) and/or institutions (accountability) (Madaus, 1991). Most often, high-stakes tests are standardized tests with a multiple-choice format; the AP Exam is both multiple-choice and free-response in format, and students who pass the exam receive the equivalent of college credit for the course, which is accepted by most U.S. colleges. However, there are other high-stakes tests that are less standardized and have more flexible formats, such as student and teacher portfolios used for graduation/certification purposes. High-stakes tests, especially those developed outside schools, have been widely criticized as one-shot assessments on which important decisions are based. This “one-shot” mentality may encourage teachers to adjust instruction to ensure student success in what is perceived by some as a very narrow curriculum (Glencoe/McGraw-Hill, 2000; Randall, 2001; Watson, Abel, Lacinia, Alexander, and Mayo, 2000). There has also been considerable discussion, and some disagreement, about what constitutes appropriate and/or ethical test-preparation practice (Haladyna, Hass, and Nolen, 1990; Moore, 1994; Popham, 1991). The kind of test preparation that AP teachers seem most likely to engage in are activities such as the following:

- Reviewing generalized test-taking skills;
- Using practice questions that have the same format as AP questions;
- Using questions that have been administered in previous years and released;
- Teaching students how to approach questions that have appeared in previous years; and
- Assigning test-related homework.

Anecdotal reports suggest that teachers tend to spend a significant amount of time before an exam administering practice tests and reviewing concepts with students. The objective is to ensure that students have the opportunity to become familiar with the layout of the exam and with its general substance (Glencoe/McGraw-Hill, 2000; Watson, et al., 2000). Familiarity with the exam entails, for example, knowing how many questions are asked, how long each section is, and in some cases, an idea of expected performance by taking a practice test in a proctored situation. One hypothesis, based on the discussion and findings presented above, is that teachers who spend

substantial amounts of time preparing their students for the test will probably not cover all the content necessary for students to gain a deep understanding of the subject matter and perform well on the test. Given all the topics that ought to be covered in AP courses, teachers have to juggle between (a) promoting general familiarity with the content and format of the tests; and (b) helping students gain a deep understanding of important substantive concepts, as facilitated by the content coverage strategies that we discuss next. Even though in most cases teaching to the test is not considered a positive teaching strategy, this judgment often changes when the test itself is strongly aligned with current notions of learning and development. In such a case, as with the Advanced Placement courses, the content and skills covered in the exam may be deemed relevant (Linn and Burton, 1994) and, thus, every student would be expected to benefit from the instructional aspect of preparing for and completing the assessment. The reason for this rationale is that these types of assessments are considered to be “episodes of learning” (Wiggins, 1992; Wolf, 1992); that is, insofar as the tasks included in the test resemble instructional activities, student participation in test preparation may be considered to be a learning event (Wiggins, 1998).

## Summary

Measuring teacher practice is an extremely difficult task because of the many contextual and moderating factors that affect it, as well as the challenges in reliably measuring the specific elements of pedagogy. In our model, the factors influencing teacher practice include: teachers’ training and expertise, school context, and classroom context. Teaching practices are defined in three categories: instructional and assessment practices, content coverage practices, and test-specific practices. These categories are not considered as separate ones, but rather as overlapping categories that provide an overall portrait of teaching practices.

## Methodology

### Data Gathering

To address the questions posed in this study, we gathered as much information as possible for as many teachers as feasible about the context of AP classes and AP teaching. The aim was to enable statistical analysis with sufficient power to detect important effects. This study used a survey to create a statistical profile of a relatively large sample of AP teacher practices. This methodology was preferred over a smaller number of in-depth case studies in order to reliably identify general trends and needs among AP teachers. Thus, using a survey was deemed a

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reasonable way to obtain the data, since a survey would allow the gathering of information about a whole set of topics. It would also allow us to obtain this information from a large number of teachers. Next, we discuss how we constructed the sample of teachers and created the survey instrument that was used to query AP teachers about their practices.

## Sample

The initial sample, provided by ETS, included a comprehensive list of AP Coordinators at schools offering AP U.S. History or AP Biology. This list constituted the sampling frame for the first phase of the project. From this list a sample of schools was selected to achieve representative samples of U.S. schools offering AP U.S. History and AP Biology. Because AP Biology and AP U.S. History schools were selected independently, some overlap existed, meaning a small proportion of AP Coordinators contacted were asked to provide teacher contact information for both AP Biology and AP U.S. History teachers. AP Coordinators were asked to return a form, providing contact information for all teachers of the subject at the school. The teacher information gathered in this process formed the population for the second phase of the project wherein a sample of teachers was asked to complete a questionnaire. This sample was selected from schools with AP Coordinators that responded to the first phase of the project. This two-step sampling process—school selection followed by teacher selection within these schools—offered a representative sample of teachers in both AP Biology and AP U.S. History by developing a list of AP teachers in the United States where none was available.

A nationally representative random sample of 3,484 AP Coordinators was surveyed to obtain contact information for all AP teachers in both U.S. History and Biology at their respective schools. The samples were designed to give full representation to public and nonpublic<sup>2</sup> high schools in various regions of the nation, and to high schools in different size categories (number of students). Biology and U.S. History were the two chosen subjects because both have relatively large volumes and can be seen as representative of the science and humanities offerings of the AP Program. AP Biology has a very broad and dynamic curriculum that poses many pedagogical challenges while U.S. History has a well-established curriculum and an innovative assessment structure.

The purpose of the AP Coordinator survey was to gather contact information for the target respondents of the survey: all teachers who had taught AP Biology or U.S. History during the current school year or the two years prior. The survey consisted of an advance e-mail, a mailed packet (cover letter, request for contact

information, a return envelope), a reminder postcard, an e-mail reminder (supplemented with a telephone call for AP Coordinators missing e-mail) and a second mailed packet for nonrespondents. This phase of the research was conducted in fall 2001, and the sample was then refreshed in fall 2002 to include schools that offered the AP course for the first time in the 2002-03 academic year.

For each subject, pilot surveys were sent to 320 schools—to 185 teachers in AP Biology and 140 in AP U.S. History. These teachers were removed from the final database to avoid burdening these teachers and contaminating the results of the final survey. The final survey was sent to the remaining teachers in the database, which included 1,874 teachers of AP Biology and 2,336 teachers of AP U.S. History.

## Survey Construction

A survey method was selected as the method of choice to get a relatively large sample for adequate statistical analysis. Most items in the survey were five-point rating scale items, with a few four-point scales, and one open-ended question. Before the final version was administered to the large sample in spring 2003, the survey went through three main phases, which are listed below.

### Initial Draft

Pre-existing surveys, such as those used to gather information about NAEP and about AP Summer Institutes, were reviewed for possible item types to include in the initial survey draft. The issues of interest were professional development, teacher background, school and classroom contexts, AP related issues, and teacher practices. Surveys for measuring teacher efficacy and beliefs were also reviewed, with some items adapted as vignettes to gauge teacher responses to possible classroom scenarios.

Information on instructional practices came from two parallel surveys, one for each course (Biology and U.S. History). Each survey contained common items as well as parallel items reflecting either biology or history content. Once the first draft of the survey was assembled, experts in teaching practices provided feedback and edits to refine the instrument.

### Focus Groups

Using focus group interviews, the surveys were administered in a face-to-face context to a small number of AP teachers in California, and by telephone to teachers in Virginia and Washington, D.C.<sup>3</sup> In the focus group and phone interviews, teachers were asked to respond to each item and to indicate which items they deemed most relevant or irrelevant. They were then asked for

<sup>2</sup> Schools self-designate themselves as either parochial or private, seemingly then differentiating religious and secular schools; however, some religious schools call themselves private and not parochial, which leads to confusion when trying to compare parochial and private school teachers. Moreover, the category nonpublic was introduced.

<sup>3</sup> The phone interviews were conducted due to inclement weather, and where attendance in focus groups would have been too small (3 teachers).

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suggestions about other items to be included in the survey to identify key issues that may have been overlooked.

Based on this feedback and analyses of teacher responses, some items of the survey were modified or deleted. One interesting finding from this phase of the study was that most teachers did not respond well to questions about teacher efficacy, such as how much they believed all students could learn. Often, respondents felt that these items demanded socially desirable responses, and thus including them would not provide any useful information. In addition, most teachers had very negative reactions to these questions. Thus, items about teacher beliefs and efficacy were not included in the subsequent drafts of the survey. In addition, an item that asked teachers to measure both quantitatively and qualitatively their emphasis on certain topics was also removed—teachers indicated that they did not think about topics quantitatively and trying to untangle the depth of emphases versus the amount of time was something they could not distinguish. Those items were revised to the current versions that only ask about level of emphasis.

### **Pilot Test**

After another round of feedback from the content experts, the resulting revised surveys were pilot tested with multiple respondents across the country. The sample of AP teachers used for the pilot study contained no overlap with the production sample of AP teachers. These teachers were asked to complete a questionnaire and comment on its content, with 127 AP Biology and 97 AP U.S. History teachers returning the survey.

As a result of the pilot, four types of changes were introduced: (1) the scale of some items was modified to better obtain distributions of responses across all respective categories; (2) some items were combined; (3) some items were eliminated; and (4) a few additional items were added. A summary of these changes is included in Appendix A.

### **Final Survey**

Based on feedback from teachers, survey experts, teacher-education researchers, and information from analyses of the pilot study data, a final instrument was created and delivered to 1,874 teachers of AP Biology and 2,336 teachers of AP U.S. History in the spring of 2003.

The study population was defined as teachers of Advanced Placement Biology and U.S. History at high schools in the United States. Teachers were eligible if they had taught either subject at any time from the spring of 1999 to the spring of 2003. Of those, 1,171 AP Biology and 1,219 AP U.S. History teachers responded (a 62 percent

return rate for AP Biology and a 52 percent return rate for AP U.S. History using the Dillman<sup>4</sup> model to increase survey return). Most respondents were public school teachers: 912 for Biology and 932 for U.S. History. These numbers are representative of the surveys mailed out, as 76.6 percent of surveys were mailed to public school teachers: 78 percent of AP Biology respondents and 76 percent of AP U.S. History respondents were public school teachers. About 21 percent of mailed surveys were targeted at nonpublic school teachers.<sup>5</sup> A similar percent of surveys were returned: 21.2 percent for Biology and 20.3 percent for U.S. History. The remaining teachers were classified as “missing” in that their schools were not yet on file with the College Board as to the type of school they are (for schools administering AP for the first time). Almost 2 percent of schools were administering AP for the first time in the mailed sample; more AP U.S. History teachers from these new schools responded than AP Biology teachers (3 percent and .8 percent, respectively). In addition, the sample was representative by both region and school size.

### **Tracking and Data Entry**

Returned mail was tracked via a tracking number affixed to each piece of mail. Information on completions, partial completions, disqualifications,<sup>6</sup> and refusals was compiled for use in calculating response rates and determining recipients of subsequent mailings. Partially and fully completed surveys were held over for entry. One of every six entered questionnaires was reliability checked for entry errors. A portion of the tracking was also reliability checked. Additionally, out-of-bounds erroneously keyed answers were identified in the data and subsequently corrected.

### **Margin of Error and Tests of Significance**

The margin of error for the results of this survey is plus or minus 3.6 percent, with a confidence level of 95 percent. That is, 95 out of 100 samples of this size, drawn from the same population, will generate a sample result that is within plus or minus 3.6 percentage points of the population value. On certain questions that were answered by smaller numbers of respondents, the margin of error is correspondingly greater. Additional steps were taken in order to prepare the data for analysis. The data file was labeled in a statistical program and checked for accuracy. Also, missing values for both gender and age were substituted with information available in the sample file.

<sup>4</sup> The Dillman (2000) model requires nine weeks for data gathering with the following steps: an advance e-mail, a mailed packet, a reminder postcard, an e-mail reminder (with telephone calls as necessary), and a second mailed packet, this time followed by an additional e-mail reminder.

<sup>5</sup> We originally planned to analyze public, private, and parochial schools. This was under the assumption that private schools were secular and parochial schools were religious. However, parochial schools can be classified as private, so we decided to combine private and parochial schools into nonpublic schools.

<sup>6</sup> Teachers were considered disqualifications for two reasons: if they returned the survey indicating they never taught the subject, or the teacher no longer worked at the school. They were removed from the list to be contacted further regarding the survey.

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# Model and Contents of Final Survey

The Biology and U.S. History surveys were parallel, each with 39 similar questions, but modified for the specific nature of each subject.

## Final Survey Construction

In the AP Teacher Practices surveys, we attempted to gather data to better understand AP teacher practices by creating a portrait of the school, classroom, and teacher factors mentioned earlier in our presentation of the theoretical framework. In addition to that purpose, the surveys were created with the goal of measuring the effectiveness of certain teaching practices—effectiveness being defined as the students’ passing rates. Hence, we had a dual goal: we aimed to create items that included several practices representative of what little is known about AP teachers’ practices, while also including specific practices that we hypothesized, based on the literature review, to be more effective. Next, we provided a general discussion of the relationship we thought existed between each factor and effective teaching practices.

First, we expect that teachers’ training and expertise have an effect on the quality of teachers’ practices. For instance, we expect that as the teachers’ participation in professional development activities increase so do the passing rates of the students of those teachers. Second, we predict that the school context shapes teachers’ practices in ways that may be conducive to effective or ineffective AP practices—that is, practices that lead to high rates of passage on the AP Exam. For example, we hypothesize that schools that provide more preparation time for teachers to plan their AP classes afford teachers the opportunity to implement better quality teaching practices. Third, we pay attention to the classroom context and how this context influences teachers’ practices. In this case we postulate that the preparation of the students in the teacher’s class interacts with the instructional practices, which may be related to the final passing rates of students in the AP Exam. Fourth, and related to the school context, we conjecture that as the quantity and quality of the materials and resources provided by the school increases so do teachers’ capacity to implement successful teaching practices. As an illustration, let’s consider the scenario in which one teacher has access to several computers that are working properly versus a teacher who has no access to any computer. We stipulate that the teacher with access to computers is working in an environment that is more conducive to effective teaching practices.

Measuring these constructs will provide us with information about teachers’ readiness to implement successful teaching practices. Our next objective is to

describe how those practices take place in the classroom. To that end, we have created three main constructs embedded in a dimension we call “the factors that affect teacher practice.” First, we measure the instructional and assessment practices of teachers. In this construct our intent is to depict a picture of teachers’ practices. This construct will take different forms for different subject matter. In the case of U.S. History, we foresee that teachers who make extended use of in-depth essays combined with practice with multiple-choice tasks are more effective than teachers who focus only on the latter instructional form. In the case of Biology, we envision that teachers whose students independently design and conduct their own science projects will be more effective than those whose students do not have such opportunities. Second, we determine teachers’ content coverage of the themes and topics of AP curriculum. We propose that the higher the alignment between the teachers’ curriculum and the AP curriculum, the more effective the teachers’ practices will be. Third, we aim to ascertain teachers’ use of test-specific instructional activities and practices. Our view is that the stronger these test-specific practices are, the more effective the teacher practices will be. For instance, we presuppose that teachers who conduct after-school sessions will have more students who would pass the AP Exam.

In the following sections we present each dimension, its factors, the items corresponding to each factor, and the analyses conducted for each factor. (Please see Appendixes D and E for copies of the full surveys for both subjects.)

## Dimension 1: Factors Affecting Teachers’ Practices

### Substantive Expertise and Training

Substantive expertise and training refers to the teacher’s experience with the content of the given course. This is a product of numerous factors, such as the educational background of the teacher (including educational level, major, and teaching certification), previous experience teaching courses in this subject area—AP and otherwise—and the teacher’s ongoing professional development through workshops, institutes, university classes, and seminars. Presented in this light, professional development refers both to further exposure to course content as well as to experiences that bolster one’s pedagogy (items 27–35).

### School Context

School context refers to the nature of the learning environment. It measures a variety of matters related to how the school context provides or does not provide a positive setting for teaching and learning. For instance, this factor provides data for scheduling, the amount of classes and prep time that the teacher has during the day, and the amount of influence that the teacher has in organizing his or her AP class (items 16–24).

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## Classroom Context

Classroom context describes the factors that affect the composition and organization of the classroom, such as the class size (items 25–26).

## Dimension 2: Analysis of Teachers' Practices

### Instructional and Assessment Practices

Instructional and assessment practices (teachers' pedagogical practices) may be manifested through the nature of assignments (e.g., how students are configured for in-class and out-of-class activities and assignments). It also concerns the relative role of various styles of instructional delivery that the teacher uses in the course. In addition to measuring the teacher's decision about how to deliver instruction, this factor also reflects the emphasis that the teacher places on various "types" of knowledge realized through the course. For instance, it measures the relative focus that the teacher places on different kinds of knowledge and ways to depict such knowledge, such as reciting facts and terminology, understanding key concepts from the course, and developing particular types of reasoning skills, etc. This factor also deals with the ways in which teachers assess students' understanding and provide feedback to students based on those assessments. For example, it gauges information about the type of tests used by teachers and the frequency with which they use those types of tests. Additionally, this factor addresses the teacher's use of technology in the classroom. Finally, it covers issues directly related to instructional practice that do not usually take place during instruction, such as teacher's preparation time and students' homework load (items 1–8).

### Content Coverage

Content coverage addresses the manner in which teachers cover the materials included in the AP course. The first issue addressed is how depth of course concepts is negotiated relative to breadth of course content. Second, teachers report the specific topics and themes that they find more relevant and thus tend to place more emphasis on, and rank those topics/themes regarding the degree of difficulty students have learning them. Last, content coverage refers to the extent to which the content of the AP class under examination is aligned with the content of the AP Exam. To examine such alignment we used the information teachers gave about the emphasis they place on topics and themes and about topic difficulty, and compared that information with the number of questions per topic/theme included in the exam. We consider that the number of items corresponding to each topic is an indicator of the emphasis the curriculum places on them (items 9–12).

## Test-Specific Instructional Activities and Practices

Test-specific instructional activities and practices refer to the instructional activities and pedagogical practices that the teacher uses specifically because he or she is teaching an AP class. This factor addresses the teacher's instructional decisions, both inside and outside of class time, related to getting students ready to take and pass the AP Exam, and accounts both for activities, such as after-school review sessions, as well as pedagogical decisions, such as using AP practice tests to familiarize students with the AP Exam. It also considers the extent to which the teacher encourages or requires students to participate in extracurricular activities, such as districtwide competitions, inasmuch as these activities relate to gaining knowledge about course content and preparing for the AP Exam (items 13–15).

## Additional Data

This is a source of information not covered by the factors listed above but used in different ways to gain insight into teacher backgrounds, like teachers' age, ethnicity, and sex. There was also an open-ended question asking: "Do you have any comments for us regarding your experience as an AP Biology/U.S. History teacher? Is there anything you do as an AP Biology/U.S. History teacher that you feel is especially noteworthy?" This question was analyzed through qualitative means in a separate memo.

## Results

To address the question "What are the potentially salient features on which AP teachers' practices differ?" we look at the results of both AP Biology and U.S. History surveys separately and comparatively. The survey results are based on an analysis of results of 1,171 AP Biology and 1,219 AP U.S. History teachers.

## Summary of Findings from AP Biology Survey: Descriptive Analysis

### Teacher Characteristics

The teachers in this sample tended to be *veteran* teachers (i.e., 71 percent of teachers have taught for more than 10 years, and only 6 percent have taught for fewer than 3 years). A survey by NCES on public and private school teachers indicates that only about 61 percent of public and 52 percent of nonpublic school teachers have taught for 10 years or more. These data suggest that the AP teachers in this sample tend to have a higher level of teaching experience than the average U.S. teacher. Most teachers in the sample had taught AP Biology for less than 10 years;

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therefore we conclude that most AP teachers do not tend to teach AP in the first years of their teaching careers, but rather tend to have taught several years before teaching AP courses.

The majority of teachers (more than 80 percent) had taught AP Biology in the last three years. Thus, the information from this survey tends to represent *current trends* in AP Biology teaching. Of the survey respondents, only 7 percent of teachers were not teaching AP Biology during the past year.

In terms of *background*, AP Biology teachers tend to have a high degree of preparation: while many of them (85 percent) had obtained at least a master's degree, national (NCES) data indicate that only 43 percent of the elementary and secondary public school teachers have a master's or a higher degree. Similarly, while the vast majority (84 percent) of AP Biology teachers had a degree in biology and held a regular or standard state certificate degree, just 55 percent of U.S. high school teachers attained this level of preparation (major and certification) to teach biology. This finding indicates a higher degree of preparation of this sample when compared to U.S. public school teachers.

Demographic data indicate that most AP Biology teachers in this survey are 36 years old or older (79 percent), Caucasian (93 percent), and female (56 percent). When compared to national trends,<sup>7</sup> we see that minorities are less represented in our sample than in comparable U.S. teacher populations, with African American and Latino/Hispanics being the most underrepresented in this sample. In addition, there were more males in our sample than in the current population of secondary school level teachers (35 percent).

The most common professional development *activities* in which AP Biology teachers participated were reviewing the released AP Biology Exams, course description, and *Teacher's Guide* (respectively 87 percent, 80 percent, and 77 percent of teachers said they had done these things more than once in the last five years). In contrast, relatively few teachers reported they had consulted for AP workshops or taught in AP Institutes (3 percent and 2 percent respectively). We believe that this is more a reflection of the nature and accessibility of these professional development activities (i.e., a much smaller number of teachers is needed for these jobs and thus a limited number of teachers can participate each year) than of teachers' interest in them. It is interesting to note that 30 percent of AP teachers have never attended an AP workshop.

Teachers indicated that the *resources* that have the most influence in their teaching of AP Biology are lab manuals and previously administered AP essay topics and/or the accompanying free-response scoring rubrics (respectively 68 percent and 64 percent of teachers reported these resources as being "very" or "extremely" influential). The least influential

resource was reported to be conversations about teaching and learning through the Internet (11 percent).

The area in which teachers feel they have the most critical *training need* is in how to cover the course content in the time available—getting suggestions about what could be dropped or modified (78 percent of respondents indicated they have a "critical" or "important" training need in this area). The areas in which teachers indicated having less important training needs were: developing specific skills such as analytic writing, advanced problem solving, and computers, as well as learning about specific areas of course content (25 percent and 15 percent, respectively).

### School Context

The majority of teachers (68 percent) said they had *volunteered* to teach the AP class. This information was compared with the question about teachers' content area expertise from their college major. The analysis indicated no relationship between these items, which may be due to the fact that the majority of teachers have a biology degree. In addition, most teachers taught only one AP Biology class (70 percent).

With regard to the *AP teaching schedule*, a large number of teachers (52 percent) reported teaching a 30–60 minute session every school day throughout the academic year. The other portion of teachers was mainly divided in two subgroups: some teachers indicated teaching a 61–110 minute session every day throughout the academic year (25 percent), and others taught a 61–110 minute session every other school day throughout the academic year—block scheduling (19 percent). A very small number of teachers were teaching compressed fall or spring classes (respectively 2 percent and 3 percent of teachers). It thus seems that most teachers do not teach more than one hour of AP a day to the same group of students.

In general, AP Biology teachers tend to work in schools that have adequate *facilities, supplies, and materials* (73 percent, 74 percent, and 78 percent of the teachers rated these areas as being "good" or "excellent," respectively). Additionally, the vast majority of teachers (90 percent) agreed that their *departments* encourage them to experiment with their teaching and that they have a wide degree of autonomy in selecting the content of their AP Biology class. Most teachers (84 percent) also indicated that there is a strong commitment to AP courses in their department. Finally, more than half of the teachers (59 percent) said that they are encouraged to coordinate the content of their courses with other teachers in their department.

In relation to *student enrollment*, many teachers (76 percent) indicated that their schools have special procedures or criteria for enrollment for AP Biology

<sup>7</sup> National Center for Education Statistics (NCES, 1999–2000) table 68 (which aggregates public and private and elementary and secondary school teachers) indicates that 84.3 percent of teachers are Caucasian while the rest (15.7 percent) are minorities.



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classes, the most salient factors being completion of a prerequisite course (72 percent) and achievement of required grades in prior courses (63 percent).

A vast number of teachers (81 percent) noted that their schools do not have any initiatives to increase the enrollment of minority students in AP Biology classes. The main reasons for this finding were the lack of minorities at those schools (39 percent) and already having “sufficient” minority enrollment (27 percent).<sup>8</sup> Of those schools that had minority enrollment initiatives, the most frequent initiatives were recruitment by teachers (18 percent) and/or counselors (15 percent).<sup>9</sup>

Regarding the school procedures for students to take the AP Biology Examination, 41 percent of teachers noted that in their schools all students who take the AP class are required to take the exam, while 38 percent of teachers reported that all students who take the course are encouraged to take the AP Exam. As a result of these policies, the most common scenario (75 percent) is for 75 percent or more of the students to take the AP Biology Examination.

## Classroom Context

With regard to the amount of control teachers feel they have to teach their AP Biology classes, teachers reportedly feel that they have the most control in selecting their teaching techniques (97 percent indicated they had substantial or complete control); they also reported a good “amount of control” in determining what textbooks and supplementary materials to use as well as content to be taught (63 percent, 86 percent, and 89 percent, respectively, marked they had “substantial” or “complete” control).

In terms of class size, AP Biology teachers work, in general, with smaller class sizes than their non-AP counterparts:<sup>10</sup> 71 percent of teachers reported having 20 or fewer students in their AP classes.

## Instructional and Assessment Practices

The learning goal that teachers emphasized most was “understanding key concepts” (67 percent of teachers indicated placing “more than average emphasis” on this learning goal), while the learning goal receiving the least emphasis was “learning scientific methods” (20 percent). We should note that these findings should be interpreted carefully; realistically, teachers are not capable of placing “more than average emphasis” on the majority of the things they do. Teachers’ responses to this question may be inaccurately high for various reasons. First, it may be that teachers did not understand the scale. Second, it may be that teachers inflate their responses. Third, it may be that teachers have different interpretations of what “average emphasis” means. And fourth, teachers

may have incorrectly reported the emphasis they place on different topics because of a misunderstanding of the nature of the question; while the questions asked teachers to compare the emphasis placed on topics within their class, teachers may have interpreted the question as asking them to compare their emphasis with that placed by other teachers.

In an attempt to search for a possible explanation for this distribution of data, we explored the possibility that teachers who were teaching fewer classes felt they had more time than their colleagues and thus thought they placed more than average emphasis on the different objectives addressed in the curriculum, but nonsignificant chi-square statistics do not support this hypothesis.

The predominant instructional method self-reportedly used by teachers is lecturing (92 percent of teachers indicated using this method more than once a week). Teachers reportedly teach test-taking strategies and make group assignments less often (24 percent and 22 percent, respectively). The general trend in teacher responses indicates that teachers tend to make less use of instructional strategies that are highly involved and require substantial instructional time in favor of strategies with which they can cover considerable amounts of materials in a shorter time frame.

The activities students are more frequently asked to do, as reported by teachers, are to explain their reasoning or thinking (59 percent of teachers reported using this activity more than once or twice a week), work on biology exercises (49 percent), conduct an experiment (34 percent), and apply biology concepts to real or simulated real-world problems (39 percent). The activities reported as rarely implemented are: asking students to design and conduct science projects (<1 percent) and participating in various competitions (<1 percent). The latter activities tend to be those that require a higher time commitment on the part of both teachers and students.

Teachers reported making ample use of computers both to prepare and to carry out instruction. The main uses of computers, in decreasing order of reported frequency, were teachers’ information research on the Internet (92 percent of teachers reported using computers for this purpose), students’ information research on the Internet (85 percent), running simulations and modeling (69 percent), and data analysis (62 percent).

The assessment method that teachers most frequently use is multiple-choice tests (95 percent of teachers indicated using this method at least once or twice a month) and the methods less frequently used are presentations by students (21 percent) and independent research/projects by students (9 percent). Again, teachers seem to be implementing strategies that are most time-efficient.

The type of feedback most utilized by teachers is providing students with numerical or letter grades (64

<sup>8</sup> These categories were not mutually exclusive.

<sup>9</sup> These categories were not mutually exclusive.

<sup>10</sup> NCES indicates that the average class size in traditional secondary public school classes with departmentalized instruction is 23 students per class, and 20 in private schools.

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percent of teachers provided this kind of feedback more than once or twice a week). Teachers reported that they rarely provide students with paragraph-length or page-length descriptions of strengths and weaknesses (10 percent and 1 percent, respectively). Again, instructional time and the extra time necessary to furnish this kind of feedback to students seems to be at the core of this finding.

Almost half of the teachers (41 percent) indicated spending at least 10 hours of their time *preparing* for their AP Biology class(es) outside of school. The least reported number of hours dedicated to AP Biology preparation outside of school was between 0–3 hours per week (6 percent). These numbers indicate that AP teachers tend to dedicate significant extra time to prepare for their AP classes. The data from this question was compared with the data from the question which asked teachers to report the number of classes they were teaching in the year the survey was administered, as teachers reported having different AP Biology loads (some reported teaching one AP Biology class, while few reported teaching more than five). Our analysis revealed no relationship between responses to these questions.

The majority of teachers (81 percent) request students to devote between 5 and 10 hours per week to AP homework, and a very low number (10 percent) ask students to dedicate less than 5 hours per week, thus indicating the high involvement expected on the part of students in AP Biology classes.

## Content Coverage

A majority of teachers (57 percent) said that their primary concern in preparing students in their AP Biology class for the AP Exam is to *cover* some topics very thoroughly, even if that means not covering certain topics at all. The other fraction of the teachers (43 percent) pointed to their preference to cover each potential topic on the examination, even if only briefly. One could hypothesize that teachers who cover every topic briefly may prefer to dedicate more time to prepare their students for the multiple-choice portion of the AP Exam, while those who concentrate on thorough understanding of fewer concepts may prefer to help their students prepare for the free-response portion of the AP Exam. A later question asks teachers on which portion of the test they focus when helping students prepare for the AP Exam: multiple-choice, free-response, or both. When eliminating teachers who said “both,” teachers who tend to put more emphasis on breadth of coverage do tend to pay more attention to the multiple-choice part of the test than on the free-response part (75 teachers selected multiple-choice, while 52 selected free-response). However, it is also the case that teachers who tend to put more emphasis on depth of coverage also tend to pay more attention to the multiple-choice part of the test

(130 teachers selected multiple-choice, while 79 selected free-response). This finding contradicts the idea that there may be a relationship between the kind of coverage preferred by teachers and their focus on specific parts of the AP Exam when helping students prepare to take such an exam.

A comparison of the results of the question regarding breadth versus depth of content coverage to those asking teachers the *frequency with which they implement different kinds of assessment* produced significant results. Teachers who cover each potential topic tend to use multiple-choice tests more often than those who cover fewer topics in more depth; the difference in means is statistically significant, and the effect is small given the range of effects usually found in the educational field.

The biological *topics* that teachers reported placing at least more than average emphasis on are: “Molecular Genetics” (69 percent of teachers reported placing at least more than average emphasis on this topic), “Heredity” (69 percent), and “Cellular Energy Processes” (8 percent); while the topics that reportedly received less emphasis from teachers are “Ecology” (19 percent) and “Diversity of Organisms” (19 percent). Not surprisingly, the topics that teachers felt were most difficult for students were “Cellular Energy Processes” (53 percent) and “Molecular Genetics” (30 percent). This is probably one of the reasons why teachers tend to dedicate more time to these topics.

Using information about the number of questions under each topic included in AP Biology, we assigned a number to each topic that represented the emphasis that it received in the exam. That is, a topic that had a higher number of questions in the exam was considered to receive more emphasis and was assigned a higher number. We also ranked teachers’ response about the emphasis they place on topics and their assessment of the topic difficulty, and then compared those ranked numbers for each topic (see Appendix B for a more detailed description). For instance, our analysis reveals that teachers tended to put more emphasis on the “Cellular Energy Processes” topic, and this increased emphasis was supported by the fact that teachers found this to be a topic difficult for students to learn; however, this topic was the second least represented topic on the AP Exam itself. On the other hand, teachers tended to put less emphasis on the “Structure and Functions of Plants and Animals” topic, and the smaller emphasis is justified by teachers’ perceived view that the topic is not difficult for students to master; this topic was represented by the highest number of items on the AP Exam. We should also note that teachers’ emphasis was similar to that placed by the exam and equal to the perceived difficulty for students in only one case: “Molecular Genetics.”

The rest of the topics show some apparent incongruence between the emphasis teachers placed on certain topics,

given their weight on the exam, and the reported difficulty of students to learn them. For example, teachers tended to put more emphasis on “Cells,” “Heredity,” and “Structure of Plants and Animals” topics relative to their emphasis on the exam, and they did not report students having unusual difficulty mastering these topics (so there is no apparent justification for the increased emphasis teachers placed on these topics). In addition, teachers tended to place lower emphasis on “Diversity of Organisms” and “Ecology” topics relative to the emphasis these topics received on the exam, and students did not find them particularly easy to learn (thus not justifying teachers’ lower emphasis on these topics).

The theme reportedly most stressed by teachers is the “Relationship between Structure and Function” (71 percent of teachers reported placing at least slightly more than average emphasis on this theme), whereas “Science, Technology, and Society” is the theme that reportedly receives the least attention by teachers (24 percent). Since we also had information available about the emphasis that themes received in the exam, we repeated the process we used with the AP Biology topics. Our findings indicate that teachers paid a lot less attention to “Science as a process,” than the emphasis placed by the AP Exam. On the contrary, teachers paid a lot more attention to “Energy Transfer,” than the emphasis placed by the AP Exam. (Please see Appendix B).

### Test-Specific Instructional Activities and Practices

Most teachers (68 percent) said that in helping their students *prepare for the AP Exam* they focused on both the multiple-choice and the free-response portions of the test.

Throughout the year, a large proportion of teachers (62 percent) claimed that they dedicated less than 20 percent of their instructional time to helping students pass the AP Exam. This amount tends to increase in the month before the AP Exam, when teachers (55 percent) tend to dedicate more than 40 percent of their time to this end. When comparing the time teachers dedicate to help students pass the AP Exam through the year and in the month before the AP Exam, the analysis confirms that the increased amount of test prep in the month before the AP Exam is statistically significant when compared to the rest of the year.

Teachers reported a variety of exam preparation strategies taking place in the month before the exam. Most commonly, teachers (66 percent) reported that students take responsibility for their preparation and dedicate more than four hours a week studying course material on their own. Among the strategies used by teachers to help students prepare for the exam, the most extended one is using old AP Exams as practice tests (49 percent of teachers indicated using this strategy more than four hours a week). Teachers are less prone to conduct teacher-

led after-school review sessions (34 percent lead after-school review sessions more than four hours a week). This analysis indicates that teachers tend to perform most of the student preparation in class while students tend to do most of it on their own rather than in study-groups.

## Summary of Findings from AP U.S. History Survey: Descriptive Analysis

### Teacher Characteristics

The teachers in this sample tended to be *veteran* teachers (i.e., 71 percent of teachers have taught for more than 10 years, and only 4 percent taught for less than 3 years), having a higher level of teaching experience than the average U.S. teacher.<sup>11</sup> Most teachers in the sample had taught AP U.S. History for less than 10 years; therefore, we conclude that most AP U.S. History teachers have been in the classroom several years before teaching this AP class.

About 80 percent of teachers have taught AP U.S. History in the last three years. A large number of teachers had taught AP U.S. History in the last five years (approximately 57 percent of respondents), which seems to then represent current teaching trends in AP U.S. History.

AP U.S. History teachers tend to have very strong *backgrounds* for teaching this class: while most teachers in the sample (63 percent) had obtained at least a master’s degree, national (NCES) data indicate that only 43 percent of the elementary and secondary public school teachers have a master’s or a higher degree. Similarly, there was a higher number of teachers who have state certification and majored in history (61 percent) in our sample than in the corresponding U.S. high school teacher population.<sup>12</sup>

*Demographic data* for the teachers in this survey indicate that the majority of AP U.S. History teachers are 36 years old or older (80 percent), Caucasian (96 percent), and male (63 percent males). When compared to national trends,<sup>13</sup> we see that minorities are less represented than in U.S. teacher populations, with African American and Latino/Hispanics being the most underrepresented in this sample. In addition, there are a lot more male teachers than the current percentage at the secondary school level (35 percent).

The most common professional development *activities* in which AP U.S. History teachers participated were reviewing released AP U.S. History Exams, the AP U.S. History course description, and the *AP U.S. History Teacher’s Guide* (87.1 percent, 82.2 percent, and 79.5 percent reported reviewing these more than once), while the least common professional development activities were teaching AP Institutes, consulting for AP workshops, and participating in AP Readings (98.7 percent, 95 percent,

<sup>11</sup> NCES data indicate that only about 61 percent of public and 52 percent of private school teachers have taught for 10 years or more.

<sup>12</sup> NCES data indicate that 29 percent of teachers have state certification and majored in history.

<sup>13</sup> As indicated earlier, NCES data indicate that 84.3 percent of teachers are Caucasian.

and 87.8 percent of teachers, respectively, reported having never done these activities). In our view, this may be more a sign of the nature and accessibility of these types of professional development activities (e.g., a much smaller number of teachers is needed for these jobs and thus a limited number of teachers can participate each year) than of teachers' interest in them.

Teachers indicated that the *resources that have the most influence in their teaching* of AP U.S. History are reviewing AP essay topics and/or examining scoring rubrics and supplementary instructional materials (respectively 67 percent and 53 percent of teachers reported these resources as being “very” or “extremely” influential). The least influential resource was reported to be conversations about teaching and learning through the Internet (61 percent of the respondents consider this resource to be slightly or not at all influential).

The area in which teachers indicated they *need more training* is in how to cover the course content in the time available—getting suggestions about what could be dropped or modified. The areas that teachers reported they do not need as much training are understanding the AP syllabus topics and having alternative instructional strategies for teaching them, developing specific skills such as analytic writing, advanced problem solving and computers, and learning about specific areas of course content.

## School Context

Most teachers said they *volunteered* to teach the AP class (70 percent). Almost half of the teachers in the sample (48 percent) were teaching only one AP U.S. History class at the time the survey was administered, while 33 percent of teachers were teaching two AP U.S. History classes.

A large number of teachers (66 percent) reported teaching a 30–60 minute session every school day throughout the academic year, whereas only 24 percent of teachers have block scheduling or semester-length AP U.S. History courses to teach.

AP U.S. History teachers tend to work in schools that provide them with acceptable access to instructional *materials* and/or resources (e.g., only 6 percent of teachers said that they get hardly any of the materials/resources they need for their teaching).

About 90 percent of teachers indicated that they have a wide degree of *autonomy* in selecting the content of their AP U.S. History class(es) and that their departments encourage them to experiment with their teaching. Most teachers (80 percent) agreed that their departments have a strong commitment to AP/Honors courses and many (64 percent) indicated that their departments encourage them to coordinate the content of their courses with other teachers in their department.

More than half of the teachers (59 percent) said that their schools do not have any special procedures or *criteria for enrollment* in AP U.S. History classes. Of the other portion of teachers who indicated that their schools do have special procedures or criteria for enrollment for AP U.S. History classes, the most salient factors in determining enrollment are reported to be achievement of required grades in prior courses (67 percent) and recommendation by teachers (68 percent). Factors that teachers reported as not being considered in determining AP U.S. History enrollment decisions are entering through vertical teaming<sup>14</sup> (4 percent) and earning a qualifying PSAT/NMSQT score (8 percent).

Most teachers (76 percent) indicated that their schools do not have any initiatives to increase the *enrollment of minority students* in AP U.S. History classes, the main reasons being lack of minorities in the school or sufficient minority enrollment. Of those schools (24 percent) that did have minority enrollment initiatives, the most frequent initiatives indicated by teachers are recruitment by teachers (23 percent) and by counselors (19 percent).<sup>15</sup>

Regarding the *school procedures for students to take the AP U.S. History Examination*, almost half of the teachers (45 percent) indicated that at their schools all students who take the course are encouraged to take the AP Exam, and another large group of teachers (36 percent) indicated that all students who take the AP class must also take the exam. As a result, most teachers (75 percent) reported that at least 75 percent of their students tend to take the AP U.S. History Exam.

## Classroom Context

With regard to the amount of *control* teachers feel they have to teach their AP U.S. History classes, teachers reportedly feel that they have the most control in selecting their teaching techniques (97 percent indicated they had substantial or complete control in this area). Overall, teachers seem to feel in control of the textbooks and materials used as well as content to be covered (77 percent, 89 percent, and 92 percent, respectively, reported they had substantial or complete control in these areas).

In relation to class size, the size of AP U.S. History classes tend to be similar or larger than the rest of U.S. secondary classrooms:<sup>16</sup> 46 percent of teachers reported having 21 or more students in their AP classes.

## Instructional and Assessment Practices

Teachers placed the strongest emphasis on the *learning goals* of understanding themes and teaching students to develop skills for stating and supporting claims (90 percent and 83 percent of teachers, respectively, indicated placing at least “slightly more than average emphasis” on these

<sup>14</sup> Vertical teaming is when teachers in the same department but in different grade levels work together to move students along the content continuum.

<sup>15</sup> The remaining percent were categorized as “other” initiatives.

<sup>16</sup> NCES indicates that the average class size in traditional secondary public school classes with departmentalized instruction is 23 students per class, and 20 in private schools.

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learning goals), and place lesser emphasis on developing historical research skills and techniques (45 percent).

The predominant *instructional methods* self-reportedly used by teachers are lecturing and teacher-led whole-group discussions (84 percent and 81 percent of respondents, respectively, indicated using this method at least more than once a week), and the strategies less frequently used by teachers are providing instruction to individual students (28 percent), small groups of students (26 percent), and making group assignments (19 percent).

The *evaluation methods* most frequently used by AP U.S. History teachers are multiple-choice tests and tests requiring sentence or paragraph length responses as well as tests requiring lengthy written responses (34 percent, 25 percent, and 18 percent of teachers, respectively, reported using those evaluation methods at least more than once a week). Teachers do not make frequent use of presentations by students and independent research/projects by students to assess their students' progress (6 percent and 4 percent, respectively).

Teachers tend to make frequent use of numerical or letter grades to give *feedback* to students about their learning: 71 percent of teachers reported providing this kind of feedback at least once or twice a week but make rather infrequent use of feedback entailing page-length descriptions of strengths and weaknesses in students' performance (1 percent).

The *activities* students are more frequently asked to do, as reported by teachers, are to explain their reasoning or thinking, discuss controversial themes or events, discuss current issues and events related to AP U.S. History, and analyze documents or evaluate essays (58 percent, 53 percent, 52 percent, 41 percent of teachers reported, respectively, implementing these types of activities at least once a week); while the activity least implemented by teachers is asking students to participate in various competitions (e.g., debates) (3 percent).

The majority of teachers reported using *computers* both to do their own research information on the Internet (84 percent) and as a tool for students to research information on the Web (77 percent).

A large group of teachers (71 percent) indicated they spend more than 10 hours of their time *preparing* for their AP U.S. History class(es) outside of school. We should note, however, that these numbers are not directly comparable across teachers, because teachers reported having different AP U.S. History loads. To better understand this relationship, we compared the data from this question to the data specifying the number of AP U.S. History classes taught by each teacher. Our analysis indicates that teachers who teach more AP classes tend to spend more time preparing for their AP courses.

Finally, the survey results indicate that 92 percent of teachers expect students to devote at least 5 to 10 hours per week to AP U.S. History *homework*.

## Content Coverage

Most teachers (57 percent) indicated that their primary concern in preparing students in their AP U.S. History class for the AP Exam was to cover each potential topic on the examination, even if only briefly. The rest of the teachers (43 percent) indicated that they would rather cover some topics very thoroughly, even if it meant not covering certain topics at all.

To ascertain *whether teachers who cover every topic briefly were dedicating more time to prepare their students for the multiple-choice portion of the AP Exam* while those who concentrate on thorough understanding of fewer concepts may be focusing on preparing their students for the free-response portion of the AP Exam, we compared the results of this question with those of another one that asks teachers on which portion of the test they focus when helping students prepare for the AP Exam (i.e., multiple-choice, free-response, or both). When eliminating teachers who said "both," our analysis shows that teachers who tend to put more emphasis on breadth of coverage do tend to pay more attention to the multiple-choice part of the test when preparing their students to take the AP Exam than to the free-response part (99 teachers selected multiple-choice, while 56 selected free-response). In addition, teachers who tend to put more emphasis on depth of coverage tend to pay more attention to the free-response part of the test when helping their students prepare for the exam (60 teachers selected multiple-choice, while 90 selected free-response). Lastly, we compared the results of the question regarding breadth versus depth of content coverage to those asking teachers the *frequency with which they implement different kinds of assessment*. A t-test showed that teachers who cover each potential topic tend to use multiple-choice tests more often than those who cover fewer topics in more depth.

The *topics* most emphasized by teachers were "Depression, 1929–1933" (67 percent of teachers reported placing at least "slightly more than average emphasis" on this topic), "Truman and the Cold War" (62 percent), "Age of Jackson, 1828–1848" (62 percent), "Industrialization and Corporate Consolidation" (58 percent), and the "Civil War" (55 percent). In contrast, the topic that received less emphasis by teachers was "Discovery and Settlement of the New World, 1492–1650" (7 percent).

The topics that teachers reported students having the most difficulty with are "National Politics, 1877–1896: The Gilded Age" (49 percent of teachers indicated this was one of the three most difficult topics for students to master); "Industrialization and Corporate Consolidation" (35 percent); "Intellectual and Cultural Movements" (28 percent); "Age of Jackson, 1828–1848" (24 percent); and "National and Economic Expansion" (27 percent). The topics that teachers reported students having the least difficulty learning are: "Kennedy's New Frontier; Johnson's

Great Society,” “Civil War,” “The Second World War,” “The First World War,” and “New Era: The 1920s” (less than 1 percent of teachers indicated these as the most difficult topics for students to master). There seems to be no clear relationship between the emphasis teachers give to different topics and their ratings of the difficulty of these topics in terms of student learning.

As we did with AP Biology, we ranked the emphasis on topics given by the exam, the teachers’ emphasis in delivering course content, and the difficulty of the topics (see Appendix C for a more detailed description). An analysis of these ranks indicates some topics for which differences between the emphasis placed by teachers and by the exam are explained by the perceived difficulty of those topics, and topics for which there is no apparent justification in terms of the topic difficulty. We first discuss those topics where we found congruence between all rankings. Teachers tended to put more emphasis on the “Age of Jackson, 1828–1848” and “Industrialization and Corporate Consolidation” topics than the emphasis placed by the exam load, and this increased emphasis was supported by the fact that teachers found this to be a topic that was relatively difficult for students to learn. On the other hand, teachers tended to put less emphasis on the “Kennedy’s New Frontier; Johnson’s Great Society” topic relative to the emphasis that this topic received on the exam. The lesser emphasis is justified by teachers’ perceived view that the topic is not difficult for students to master; this topic was represented by the highest number of items on the AP Exam.

Some incongruence on the emphasis teachers placed on certain topics was also apparent given the weight of those topics on the exam and the reported difficulty that students had in learning them. Teachers tended to put more emphasis on “The American Revolution, 1775–1783”; “Depression, 1929–1933”; “The Second World War”; and “Truman and the Cold War” topics than would be expected from the emphasis these topics received on the exam, and they did not report students having an especially difficult time mastering them. Moreover, teachers tended to place less emphasis on the topics “Discovery and Settlement of the New World, 1492–1650”; “America and the British Empire, 1650–1754”; “Colonial Society in the Mid-Eighteenth Century”; “Creating an American Culture”; “Intellectual and Cultural Movements”; “National Politics, 1877–1896: The Gilded Age”; and “The United States Since 1974”; while these topics received more emphasis on the exam and students did not find them particularly easy to learn.

The *themes* reportedly most stressed by teachers are “Origins of Slavery” (54 percent of teachers reported placing at least slightly more than average emphasis on this theme), “Growth of New England” (46 percent), and “Mercantilism: The Dominion of New England”

(42 percent). “Education: Colleges and Universities” and “Professionalism and the Social Sciences” are the themes that reportedly receive less attention by teachers (9 percent and 10 percent, respectively).<sup>17</sup>

## Test-Specific Instructional Activities and Practices

Most teachers (70 percent) said that in helping their students prepare for the AP Exam they focus both on the multiple-choice and the free-response portions of the test.

*Throughout the year*, almost half of the teachers (48 percent) claimed that they dedicate less than 20 percent of their instructional time to *helping students pass the AP Exam*, and about one quarter of the sample indicated dedicating between 21 percent and 40 percent of their instructional time to helping students pass the AP Exam.

In the *month before the AP Exam*, teachers allocate various amounts of time to helping students pass the AP Exam. The amount of time is about equally distributed across the five choices (less than 20 percent, 21–40 percent, 41–60 percent, 61–80 percent, more than 80 percent). Most commonly, 47 percent of teachers dedicate more than 61 percent of instructional time for test prep, while the smaller group of teachers (14 percent) assigns less than 20 percent of instructional time for test prep. When comparing the time teachers dedicate to help students pass the AP Exam, the data indicates that teachers significantly increase the amount of test prep in the month before the AP Exam.

Teachers believe that students’ individual and/or independent study (66 percent of teachers indicated their students study more than 4 hours per week on their own) is the most common activity used in preparing for the AP Exam. Less frequently used strategies are teacher-led after-school review sessions (16 percent reported doing this more than 10 hours per week) and student-led study groups (8 percent of teachers said students do this more than 10 hours per week).

## Conclusions

The purpose of this report was to create a portrait of AP teachers’ practices by answering the following two questions:

1. What kinds of questions should be asked (and how can they best be phrased) in order to gather information about the variability among AP teachers regarding their practices?
2. What are the potentially salient features on which AP teachers’ practices differ?

<sup>17</sup> Because we had no data available about the number of questions included in the exam for each theme, we could not carry the analysis we did for AP Biology themes.

To address the first question, survey development involved obtaining teachers' feedback followed by multiple rounds of instrument construction and revision. Through several iterations with content developers, experts in teacher practices, staff at the College Board and Educational Testing Service, experts in survey development, focus groups with AP teachers, phone interviews with AP teachers, and pilot testing with AP teachers, a final survey was created and administered in spring 2003. After reviewing the results of these two surveys, which showed a range of AP teacher practices and characteristics, we found yet additional ways to revise the instruments by modifying and clarifying some of the scales; these were discussed specifically for each subject area and may prove useful if such research continues into other AP subject areas.

To answer the second question, comparing the two subject areas proved useful to contrast different practices in Biology and U.S. History. This next section summarizes the similarities and differences across factors for both subject areas.

## Comparison of AP Biology and AP U.S. History Results

### Teacher Characteristics

The teachers in both samples tended to be *veteran* teachers having a higher level of teaching experience than the average U.S. teacher, and a higher level of academic preparation (both in degrees and certification). Most AP Biology and AP U.S. History teachers are at least 36 years old and Caucasian. In terms of gender, while there are more female teachers in Biology (56 percent females), this trend is the opposite in History (63 percent males). In both fields, there are more male teachers than would be expected from the current percentage of secondary school-level male teachers (35 percent).

The most common professional development *activities* in which AP Biology and AP U.S. History teachers participated were reviewing the released AP Exams, Course Description, and *Teacher's Guide*. In contrast, only a very small percentage of teachers reported that they had consulted for AP workshops or taught in AP Institutes. AP teachers commented that they valued the professional development offered by the College Board and pointed to some areas in which they would like to see further professional development opportunities: (a) integrating technology and (b) dealing with students who may lack some skills essential to performing well in the class and on the test but that are extraneous to the core of the subject matter being taught (e.g., ELD students).<sup>18</sup> This finding is in alignment with teachers' comments about the vast amount of material covered in the course and their need to use strategies to select what areas to focus on; we believe

that the purpose of teachers' review of exams, course descriptions, and teacher guides was to learn the topics and themes that are emphasized on the exam.

Both AP Biology and AP U.S. History teachers indicated that the *resources* that have the most influence on their teaching are AP essay topics and/or scoring rubrics, which are used for review. AP Biology teachers also noted the usefulness of the AP Biology lab manuals, while AP U.S. History teachers pointed to the influence of supplementary instructional materials. For both sets of teachers, the least influential activity was reported to be engaging in conversations about teaching and learning through the Internet.<sup>19</sup>

Both AP Biology and AP U.S. History teachers indicated that the area in which they have the most critical *training need* is in how to cover the course content in the time available, which is consistent with our finding that teachers' biggest concern is content coverage. AP Biology teachers reported the following areas as being less essential training needs: developing specific skills such as analytic writing, advanced problem solving, and facility with computers; and learning about specific areas of course content. AP U.S. History teachers also found those areas to be less essential, and noted that one of their less significant training needs is understanding the AP syllabus topics and having alternative instructional strategies for teaching them.

### School Context

In both samples we found that the majority of teachers said they had *volunteered* to teach the AP class. However, the *AP teaching load* seems to be different for AP Biology and AP U.S. History teachers: While most AP Biology teachers reported having to teach only one AP Biology class, less than half of AP U.S. History teachers (48 percent) were teaching only one AP U.S. History class and 33 percent of teachers were teaching two classes.

With regard to the *AP teaching schedule*, the data indicate that AP U.S. History teachers more often teach 30–60 minute sessions every school day throughout the academic year (66 percent in AP U.S. History versus 52 percent in AP Biology), while AP Biology teachers more often teach 61–110 minute sessions (25 percent in AP Biology versus 10 percent in AP U.S. History). This is probably related to the additional time required to conduct the AP Biology labs.

In general, both AP Biology and AP U.S. History teachers indicated that they tend to work in schools that have adequate *facilities, supplies, and materials*.

Most AP Biology and AP U.S. History teachers reported a wide degree of *autonomy* in selecting the content of their AP class(es). Moreover, they felt that their departments encourage them to experiment with

<sup>18</sup> Teachers were asked, "Do you have any comments for us regarding your experience as an AP Biology/U.S. History teacher? Is there anything you do as an AP Biology/U.S. History teacher that you feel is especially noteworthy?" Since the question allows for an infinite number of possible responses, this analysis tried to combine the data into themes to report trends about areas that AP teachers found important to mention. A thorough discussion of this analysis is beyond the scope of this report and is discussed in further detail in a separate memo.

<sup>19</sup> We think that engaging in discussions about teaching and learning would be a highly influential resource; the reason this resource was rated low by both subject areas may have to do with the fact that teachers have such conversations in person and not over the Internet.

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their teaching, demonstrate a strong commitment to AP/Honors courses, and encourage teachers to coordinate the content of their courses with other teachers in their department. It seems that the perceived support for AP classes is slightly stronger in AP U.S. History than in AP Biology classes.

In relation to student enrollment, while the majority of AP Biology teachers (76 percent) indicated that their schools do have special procedures or criteria for enrollment for AP Biology classes (the most salient factors being completion of a prerequisite course and achievement of required grades in prior courses), 42 percent of AP U.S. History teachers said that their schools do not have any special procedures or criteria for enrollment in AP U.S. History classes. Of the other portion of teachers who indicated that their schools do have special procedures or criteria for enrollment in AP U.S. History classes, the most salient factors were reported to be achievement of required grades in prior courses and recommendations by teachers. This is probably the case because U.S. History is a basic requirement for high school graduation, so college-bound students may be enrolling in this course to fulfill a high school graduation requirement as well as to obtain college credit. Eighty-four percent of the AP U.S. History students who took the exam were juniors, which supports the idea that students opt to take the AP version of the course to satisfy their U.S. History high school graduation requirement.

However, students do need a basic knowledge of biological concepts to successfully master the more advanced concepts covered in AP Biology. Because fewer AP Biology classes are offered per school than AP U.S. History classes (70 percent of AP Biology teachers reported teaching only one AP Biology class while 52 percent of AP U.S. History teachers reported teaching more than one AP U.S. History class), AP Biology classes may need to be more selective regarding which students to enroll based on class size limits. In addition, students may be focusing on mastering one of three laboratory sciences: biology, chemistry, and physics; departments offering AP Biology may need to have some kind of screening process that ensures that students have taken a basic science class in the subject matter. In fact, 51 percent of the AP Biology students who took the exam in 2003 were seniors. This finding reveals that students most likely take this course as an additional science course in their final year of high school rather than as a graduation requirement.

The vast majority of both AP Biology and AP U.S. History teachers noted that their schools do not have any initiatives to increase the *enrollment of minority students* in AP classes; the main reasons for this finding were the lack of minorities at those schools and already having “sufficient” minority enrollment. In 2002, 28 percent of AP examinees were members of ethnic minority groups,

an increase from 11 percent in 1979. The strategies most widely used by the few schools that did have minority enrollment initiatives were recruitment by teachers and counselors.

Regarding the school *procedures for students to take the AP Exam*, the largest group of AP Biology teachers (41 percent) reported that in their schools all students who take the AP class are *required* to take the exam, and 38 percent reported that all students who take the course are *encouraged* to take the AP Exam. Conversely, the largest group of AP U.S. History teachers (45 percent) indicated that at their schools all students who take the course are *encouraged* to take the AP Exam while 36 percent indicated that all students who take the AP class *must* also take the exam. That is, while the largest percentage of AP Biology students who take the class are *required* to take the exam, AP U.S. History students are just *encouraged* to do the same. The result of these policies, at least in terms of the number of students who take the exams, seems to be similar: About 75 percent or more of the students reportedly take these AP Examinations.

### **Classroom Context**

With regard to the amount of *control* teachers feel they have to teach their AP Biology or U.S. History classes, teachers reportedly feel that they have the most control in selecting their teaching techniques (about 75 percent selected the category “complete control”). The area in which the two groups of teachers reported having less control is in selecting textbooks for their class(es) (48 percent of AP U.S. History teachers and 57 percent of AP Biology teachers selected the category “complete control”). However, we should note that in response to the open-ended question, some teachers shared their feeling that this autonomy at the high school level was limited by the prescriptive nature of the AP curriculum and exam.

In terms of class size, AP Biology teachers work, in general, with smaller class sizes than do their non-AP counterparts.<sup>20</sup> Seventy-one percent of teachers reported having 20 or fewer students in their AP classes, while the class size of AP U.S. History teachers tends to be similar to the rest of U.S. secondary classrooms:<sup>21</sup> The larger group of teachers (38 percent) taught between 21 and 30 students, while 32 percent of them taught 16–20 students.

### **Instructional and Assessment Practices**

Both AP Biology and AP U.S. History teachers seem to have “understanding” as their main objective of their classes, use “lecture” as the most common instructional

<sup>20</sup> NCES indicates that the average class size in traditional secondary public school classes with departmentalized instruction is 23 students per class, and 20 in private schools.

<sup>21</sup> Ibid.



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method, and frequently ask students to engage in activities in which they have to explain their reasoning or thinking. Teachers also make similar (quite extended) use of computers for preparation.

Multiple-choice tests are the most frequently employed means of assessment by both AP Biology and AP U.S. History teachers, while presentations by students and independent research/projects are less commonly implemented in the classroom. Not surprisingly, the most common type of feedback utilized by both sets of teachers is to provide students with numerical or letter grades. However, while AP Biology teachers rarely provide students with paragraph-length descriptions of strengths and weaknesses, AP U.S. History teachers tend to do this more often.

All these descriptions of teacher practices point to one common thread: Teachers tend to make more use of strategies that they feel help them cover the material in the most efficient way. Teachers noted that a number of practices, such as lecturing, using multiple-choice tests, giving reduced feedback in the form of letter-grades or numbers, etc., are implemented because they are deemed as effective in helping students pass the AP Exam. However, some teachers felt that the use of these practices limited their teaching in ways that were not aligned with current visions of how students learn (e.g., using more project-based instruction, implementing more complicated assessments such as portfolios, or giving more detailed feedback as a strategy to improve students' learning). Teachers noted that, while they thought all these strategies were key in promoting useful and lasting learning, the amount of material to cover and the demands posed by the exam prevented them from using these strategies as often as they would have liked.

Most (about 53 percent) of the Biology and U.S. History AP teachers tend to dedicate between 4 and 9 hours of their time *preparing* for their class(es) outside of school, while others (about 41 percent) devote 10 hours or more. Only a few (6 percent) invest fewer than three hours per week. These numbers indicate that AP teachers tend to dedicate a substantial amount of time to prepare for their AP classes: They commented that they dedicate numerous hours outside the classroom to prepare their teaching and grade student work. Analyses of teacher comments revealed that most teachers dedicate time outside of school to help students prepare for the exam in the few weeks before it takes place, on top of the other preparation activities that take place during the school year. This information can be better interpreted when taking into account the fact that teachers had different teaching loads. To that end, we compared the data from this question to the data specifying the number of classes taught by each teacher.

At least for AP U.S. History teachers, the more classes taught, the greater the amount of time spent preparing for the AP Exam. Our analysis also indicates that veteran teachers tend to dedicate less prep time than new teachers, as one would expect given the experience gained in the field.

## Content Coverage

While 57 percent of AP Biology teachers tend to focus on depth of coverage, 57 percent of AP U.S. History teachers tend to focus on breadth of coverage. Even though the type of coverage was not related to the type of preparation teachers employed to help students prepare for the exam (i.e., multiple-choice versus free-response portions) in the AP Biology database, our AP U.S. History analysis shows that teachers who tend to put more emphasis on breadth of coverage do tend to pay more attention to the multiple-choice part of the exam when preparing their students to take the AP Exam. In addition, AP U.S. History teachers who tend to put more emphasis on depth of coverage tend to pay more attention to the free-response part of the exam when helping their students prepare for it. Similarly, we found that for AP U.S. History teachers, it is the case that teachers who aim to cover each potential topic tend to use multiple-choice tests more often than those who cover fewer topics in more depth.

Teachers commented that the AP curriculum (both U.S. History and Biology) tends to be overloaded. Teachers present this as a negative aspect of AP classes for three main reasons: (1) AP seems to be promoting a rather shallow view of the subject matters being studied, (2) AP seems to promote teaching and learning strategies that do not align well with current visions of effective teaching and learning, and (3) AP places unrealistic expectations and workloads on teachers and students, possibly leading to burnout.<sup>22</sup>

There are two solutions that teachers propose to solve this issue: first, that the content be reduced either by splitting the class or by giving specific guidelines about which areas to highlight and which to touch on only slightly; and second, that the exam date be moved to a later time to allow teachers and students more time to cover and review the curriculum content and prepare for the test.

## Test-Specific Instructional Activities and Practices

For both the AP Biology and AP U.S. History samples, most teachers (approximately 70 percent) said that in helping their students *prepare for the AP Exam* they focus both on the multiple-choice and the free-response

<sup>22</sup> We must note that the AP teachers in our sample seem to be very dedicated, and although pointing to the shortcomings of the AP programs they teach, many of them seem to find rewards in the challenge of teaching these classes.

portions of the test. Where the two groups differ, however, is in the amount of instructional time teachers dedicate to helping students pass the AP Exam. While in the case of AP U.S. History, less than half of the teachers (48 percent) indicated dedicating less than 20 percent of their instructional time to helping students pass the AP Exam, and about one quarter of the sample indicated dedicating between 21 and 40 percent of their instructional time toward this goal. More than half of AP Biology teachers (62 percent) dedicated less than 20 percent of their instructional time to helping students pass the AP Exam, and less than one quarter of the sample (20 percent) indicated dedicating between 21 and 40 percent of their instructional time to this end. That is, AP U.S. History teachers tend to dedicate more time throughout the year to help their students prepare for the exam (the difference between AP Biology and AP U.S. History teachers is significant).

This trend is even more noticeable when looking at AP U.S. History and AP Biology data regarding the instructional time teachers dedicate to helping students pass the AP Exam in the month before it takes place. While 47 percent of AP U.S. History teachers dedicate more than 60 percent of their time to this end, and 34 percent of teachers dedicate less than 40 percent of their time, only 37 percent of AP Biology teachers dedicate more than 60 percent of their time to this goal, and as many as 45 percent dedicate less than 40 percent to it. (These differences are also statistically significant.)

The most common *method* used by both groups of teachers to help students prepare for the AP Exam is to have students engage in individual and/or independent study. Another strategy widely used by teachers is the use of practice tests. The least-used strategies to prepare students for the AP Exam are student-led study groups and teacher-led after-school review sessions. We should note, however, that several teachers reported holding review sessions outside of the school schedule, either early in the morning at a school site, after classes were over, or during the weekend, usually at the teacher's home.

In summary, in examining the profiles of both AP U.S. History and AP Biology teachers, we have documented some of the ways in which AP teachers differ, both across and within two quite different disciplines. These differences are of use to us in later phases of our research insofar as they may relate to differences in student achievement, as evidenced by performance on AP Exams.

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# Appendix A: Comparison of Items from the Pilot and the Final Survey Drafts

<i>Pilot survey items</i>	<i>Final survey items</i>	<i>Changes from pilot to final survey.</i>
1	Item 5	This question was integrated with sub-items from other questions (e.g., item 21b from pilot survey) to create a new question in the final survey.
2	Item 2	The scale was changed in the final survey to provide categories with a better distribution of the frequency of use. Some of the sub-items were eliminated in the final survey.
3	Item 1	
4	Item 3	While the pilot survey left open to the teachers to rank the sub-items in order of importance, a close-ended scale was created in the final survey.
5	Item 8	
6	Item 2	Sub-items of this question were integrated with sub-items of pilot question 2 to create a new item for the final survey.
7	Item 19	
8		Eliminated.
9		Eliminated.
10		Eliminated.
11	Item 6	The scale was changed in the final survey to provide categories with a better distribution of the frequency of use.
12	Item 10	The scale was changed in the final survey to provide categories with a better distribution of the frequency of use. Sub-item “j” was eliminated in the final survey. The final survey included a new item, which asked teachers to indicate the three most difficult topics for students to learn.
13	Item 12	The scale was changed in the final survey to provide categories with a better distribution of the frequency of use. Sub-item “i” was eliminated in the final survey.
14	Item 25	
15	Item 20	Sub-item “e” was eliminated in the final survey.
16	Item 9	
17	Item 13	
18	Item 14	Items 18 and 19 of the pilot survey were combined into one item with two sub-items (one for each of the previously existing questions).
19	Item 14	

<i>Pilot survey items</i>	<i>Final survey items</i>	<i>Changes from pilot to final survey.</i>
20	Item 15	
21		Eliminated/Integrated with other items. Sub-item “a” was added to item 2 of the final survey, while sub-item “b” was placed into item 5 of the final survey, and the first part of sub-item “c” was included in item 2 of the final survey.
22	Item 7	Items 22 and 24 were combined into one item in the final survey. The new item asks teachers how much time they dedicate each week to prepare their AP Biology class.
23		Eliminated.
24	Item 7	
25	Item 16	This item was reduced to 2 sub-items (assigned versus volunteered) in the final survey.
26	Item 21	Sub-item “j” was eliminated in the final survey. The final survey also asked teacher to select between open enrollment and school policies before answering the body of this question.
27	Item 22	Sub-item “other” was eliminated in the final survey. The final survey also asked teachers to select reasons for “no enrollment minority policy” and to specify the minority enrollment policies implemented in their schools.
28		Eliminated.
29	Item 23	The last sub-item (“other”) was eliminated in the final survey. Teachers were asked to circle only one of the sub-items.
30	Item 24	
31	Item 17	While the pilot survey left it open for teachers to indicate how many classes they were teaching, the final survey gave teachers the option to select between sub-items that ranged from 1 to 5 classes.
32	Item 26	
33		Eliminated.
34		Eliminated.
35	Item 18	
36		Eliminated.
37		Eliminated.
38		Eliminated.
39	Item 27	The category “immediately before teaching AP for the first time” was eliminated in the final survey and a new “no-once-several times” scale was added.
40	Item 28	
41	Item 29	
42	Item 30	
43	Item 31	
44	Item 33	
45	Item 34	

<i>Pilot survey items</i>	<i>Final survey items</i>	<i>Changes from pilot to final survey.</i>
46	Item 35	
47	Item 36	
48	Item 37	
49	Item 38	
	Item 4	Item added to final survey about teacher's feedback practices.
	Item 11	This new item asks teachers to indicate the three most difficult topics for students to learn.
	Item 32	Item added to the survey about when they last taught AP.

## Appendix B: Content Coverage Analysis: AP Biology

The biological topics that teachers reported placing at least slightly more than average emphasis on are “Molecular Genetics” (69.3 percent of teachers reported placing at least more than average emphasis on this topic), “Heredity” (68.5 percent) and “Cellular Energy Processes” (67.9 percent). Also receiving large attention from teachers are “Cells” (51.7 percent of teachers reported placing at least more than average emphasis on these topics), “Chemistry of Life” (49.6 percent), and “Evolutionary Biology” (46.5 percent). Teachers reported placing some emphasis on the “Structure and Function of Plants and Animals” (41.7 percent of teachers reported placing about average emphasis on this topic). The topics that reportedly receive less emphasis from teachers are “Ecology” (40.2 percent of teachers reported placing slightly less or less than average emphasis on this topic) and “Diversity of Organisms” (41.1 percent of teachers reported placing slightly less or less than average emphasis on this topic).

Teachers paid a lot less attention to the “Structure and Function of Plants and Animals” topic than would be expected from the emphasis this topic (number of items) received on the exam. Teachers paid a little bit less attention to “Diversity of Organisms” and “Ecology.” Teachers paid “adequate” attention to “Chemistry of Life,” and slightly more attention to “Molecular Genetics,” “Cells,” and “Evolutionary Biology.” Teachers paid a lot more attention to the topics “Cellular Energy Processes” and “Heredity.”

The topics teachers reported students having the most difficulty with are “Cellular Energy Processes” (52.5

percent of teachers indicated this was the most difficult topic for students to master) and “Molecular Genetics” (29.9 percent). These numbers are for the most part in accordance with the numbers reported previously: teachers tend to place more emphasis on those topics that they feel students have more difficulty learning, such as “Molecular Genetics” and “Cellular Energy Processes.” The only topic that does not follow this rationale is “Heredity.” This incongruence will be further analyzed later in this appendix.

Some teachers (7.5 percent) indicated that the most difficult topic for students to master was “Chemistry of Life.” Topics that only a few teachers indicated as being the most difficult for students to learn were “Diversity of Organisms” (3.4 percent), and the “Structure and Function of Plants and Animals” (3.1 percent). Topics that almost no teacher indicated as being the most difficult for students to learn were “Evolutionary Biology,” “Heredity,” “Cells,” and “Ecology” (only 1.5 percent, 1.3 percent, .6 percent, and .3 percent of teachers, respectively, reported finding these topics the most difficult for students to learn).

As was done with the information about the emphasis placed by teachers and the exam, we ranked teachers’ perceived difficulty of each topic and assigned a higher rank for topics that a larger number of teachers reported as being the “most difficult for students to learn.”

Teachers paid slightly less attention to “Diversity of Organisms,” than the emphasis one would have expected, given their ranking of the difficulty of the topic. Teachers paid “adequate” attention to (no difference): “Cellular Energy Processes,” “Structure and Function of Plants and Animals,” and “Ecology.” Teachers paid slightly more attention to “Molecular Genetics” and “Chemistry of Life.” Teachers paid a lot more attention to “Heredity” and “Cells.”

To sum up the comparisons of perceived student difficulty, emphasis on topic, and the number of items on the exam, an analysis of this information reveals topics for which there was congruence between teacher emphasis, exam emphasis, and topic difficulty and topics for which such congruence was not apparent.

For instance, our analysis reveals that teachers tended to put more emphasis on the “Cellular Energy Processes” topic, and this increased emphasis was supported by the fact that teachers found this to be a topic difficult for students to learn; however, this topic was the second least represented topic on the AP Exam itself. On the other hand, teachers tended to put less emphasis on the “Structure and Function of Plants and Animals” topic, and the smaller emphasis is justified by teachers’ perceived view that the topic is not difficult for students to master; this topic was represented by the highest number of items on the AP Exam. We should also note that teachers’ emphasis was similar to that placed by the exam and

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equal to the perceived topic difficulty in only one case: “Molecular Genetics.”

The rest of the topics show some apparent incongruence between the emphasis teachers placed on them, given their weight on the exam, and the reported difficulty of students to learn them. For example, teachers tended to put more emphasis on “Cells,” “Heredity,” and “Structure and Function of Plants and Animals” topics than would be expected from the emphasis these topics received on the exam, and they did not report students having an especially difficult time mastering them (so there is no apparent justification for the increased emphasis teachers placed on these topics). In addition, teachers tended to place less emphasis on “Diversity of Organisms” and “Ecology” topics, than one would expect given the emphasis they received on the exam, and students did not have a particularly easy time learning them (thus not justifying teachers’ lesser emphasis on these topics).

The theme reportedly most stressed by teachers is the “Relationship Between Structure and Function” (71.0 percent of teachers reported placing at least slightly more than average emphasis on this theme). Other themes that reportedly receive significant attention by teachers are “Energy Transfer” and “Evolution” (55.8 percent and 52.1 percent of teachers reported respectively placing at least slightly more than average emphasis on these themes). Themes that reportedly receive some attention by teachers are “Regulation” as well as “Continuity and Change” (45.1 percent and 41.9 percent of teachers, respectively, reported placing at least slightly more than average emphasis on these themes). Themes that reportedly receive less attention by teachers are “Science as a Process” and “Interdependence in Nature” (14.8 percent and 16.7 percent of teachers, respectively, reported placing slightly less than average emphasis on these themes). “Science, Technology, and Society” is the theme that reportedly receives less attention by teachers (28.3 percent of teachers reported placing slightly less than average emphasis on this theme).

As we did with the topics, we compared the ranked emphasis placed on each theme by the exam versus the ranked emphasis placed by teachers. Teachers paid a lot less attention to “Science as a Process,” than one would expect given the emphasis received by this topic on the exam. Teachers paid slightly less attention to “Continuity and Change,” “Regulation,” and “Science, Technology, and Society.” Teachers paid “adequate” attention to “Relationship Between Structure and Function.” Teachers paid slightly more attention to “Evolution,” and “Interdependence.” Teachers paid a lot more attention to “Energy Transfer.”

## Appendix C: Content Coverage Analysis: AP U.S. History

The topics most emphasized by teachers were: “Depression, 1929–1933” (67.1 percent of teachers reported placing at least “slightly more than average emphasis” on this topic), “Truman and the Cold War” (62 percent), “Age of Jackson, 1828–1848” (61.5 percent), “Industrialization and Corporate Consolidation” (58.2 percent), and the “Civil War” (55.1 percent). Topics that received significant emphasis from teachers were: “The American Revolution, 1775–1783” (53.1 percent of teachers reported placing at least “slightly more than average emphasis” on this topic), “The Second World War” (51.6 percent), “New Era: The 1920s” (50.1 percent), and “National and Economic Expansion” (46.3 percent). Some topics received considerable emphasis by teachers: “National Politics, 1877–1896: The Gilded Age” (44.6 percent of teachers reported placing at least “slightly more than average emphasis” on this topic), “The First World War” (41.8 percent), and “Kennedy’s New Frontier, Johnson’s Great Society” (42.7 percent). Several topics received average emphasis by teachers: “New South and the Last West” (54.2 percent of teachers reported placing “average emphasis” on this topic), “Intellectual and Cultural Movements” (46.5 percent), “Creating an American Culture” (50.3 percent), “Colonial Society in the Mid-Eighteenth Century” (50.3 percent), “America and the British Empire, 1650–1754” (48.4 percent), and “The United States Since 1974” (34.0 percent). The topic that received less emphasis by teachers was “Discovery and Settlement of the New World, 1492–1650” (63.8 percent of teachers indicating giving “slightly less” or “less than average emphasis” to this topic).

As we did in AP Biology, we ranked each AP U.S. History topic based on the number of questions in the exam focusing on that topic. A higher rank indicates a higher number of questions in the exam and thus represents a greater emphasis on that topic in the exam.

Teachers paid a lot less attention to “National Politics,” “National and Economic Expansion,” and “Intellectual and Cultural Movements,” relative to the emphasis this topic received on the exam. Teachers paid a little bit less attention to “New World,” “America and the British Empire,” “Colonial Society,” and “The United States Since 1974.” Teachers paid slightly less attention to “Creating an American Culture.” Teachers did pay “adequate” attention to the “Civil War,” “New Era: The 1920s,” “Kennedy’s New

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Frontier,” and “The First World War.” Teachers paid a little bit more attention to “Truman and the Cold War,” “The American Revolution,” and “New South and the Last West.” Teachers paid a lot more attention to the “Age of Jackson, 1828–1848,” “Depression, 1929–1933,” “Industrialization and Corporate Consolidation,” and “The Second World War.”

The topic teachers reported students to have more difficulty learning are “National Politics” (21.7 percent of teachers indicated this was the most difficult topic for students to master), “Intellectual and Cultural Movements” (15.3 percent), “Industrialization and Corporate Consolidation” (12.6 percent), “Age of Jackson” (9.0 percent), and “National and Economic Expansion” (8.7 percent). The topics that teachers reported students to have less difficulty learning are “Kennedy’s New Frontier, Johnson’s Great Society” (only .9 percent of teachers indicated this was the most difficult topic for students to master), “Civil War” (.8 percent), “The Second World War” (.2 percent), “The First World War” (.1 percent), and “New Era: The 1920s” (.1 percent). There seems to be no relationship between the emphasis teachers give to different topics and their ratings of the difficulty of these topics in terms of student learning.

Since the number of topics in AP U.S. History is very large, instead of doing a point-by-point comparison as the one we did with AP Biology and the one done above, we instead summarized differences in rankings of emphasis given by the exam to each topic and rankings of topic difficulty.

Teachers paid a lot less attention to “Intellectual and Cultural Movements,” “National Politics,” and “Colonial Society” than the emphasis one would have expected given their ranking of the difficulty of the topic. Teachers paid a little bit less attention to “America and the British Empire,” “The United States Since 1974,” and “Creating an American Culture.” Teachers paid slightly less attention to “Discovery and Settlement of the New World,” “National and Economic Expansion,” and “Industrialization and Corporate Consolidation.” Teachers did pay “adequate” attention to the “New South and the Last West.” Teachers paid slightly more attention to “Age of Jackson.” Teachers paid a little bit more attention to “The First World War” and “Kennedy’s New Frontier.” Finally, teachers paid a lot more attention to “The American Revolution,” “New Era,” “Depression,” “The Second World War,” “Civil War,” and “Truman and the Cold War.”

An analysis indicates some topics for which differences between the emphasis placed by teachers and by the exam are explained by the perceived difficulty of those topics, and topics for which there is no apparent justification in terms of the topic difficulty. We first discuss those topics where we found congruence between all rankings. Teachers tended to put more emphasis to the “Age of Jackson, 1828–1848” and “Industrialization and Corporate

Consolidation” than the emphasis these topics received on the exam, and this increased emphasis was supported by the fact that teachers found this to be a topic difficult for students to learn. On the other hand, teachers tended to put less emphasis on “Kennedy’s New Frontier” than the emphasis these topics received on the exam, and the smaller emphasis is justified by teachers’ perceived view that the topic is not difficult for students to master. This topic was represented by the highest number of items on the AP Exam.

There was also some apparent incongruence on the emphasis teachers placed on certain topics, given their weight on the exam and the reported difficulty of students to learn them. First, teachers tended to put more emphasis on “The American Revolution, 1775–1783,” “Depression, 1929–1933,” “The Second World War,” and “Truman and the Cold War” than the emphasis these topics received on the exam, in addition to the fact that they did not report students having an especially difficult time mastering them. Second, teachers tended to place lesser emphasis on the topics “Discovery and Settlement of the New World,” “America and the British Empire, 1650–1754,” “Colonial Society in the 1750s,” “Creating an American Culture,” “Intellectual and Cultural Movements,” “National Politics, 1877–1896: The Gilded Age,” and “The United States Since 1974,” while these topics received more emphasis on the exam, and students did not find them particularly easy to learn.

The themes reportedly most stressed by teachers are “Origins of Slavery” (54.0 percent of teachers reported placing at least slightly more than average emphasis on this theme), “Growth of New England” (45.6 percent), and “Mercantilism; the Dominion of New England” (41.8 percent). “Education: Colleges and Universities” and “Professionalism and the Social Sciences” are the themes that reportedly receive less attention by teachers (55.0 percent and 55.8 percent of teachers, respectively, reported placing “slightly less” or “less than average emphasis” on these themes). We should note that, because we did not receive information on the number of questions per theme included on the exam, we could not perform the theme comparisons that we performed for AP Biology.



# Appendix D: Survey of AP Biology Teachers

## Section 1—Instructional and Assessment Practices

Please circle one number for each item

<i>1. In comparison to the other objectives listed below, how much emphasis do you place on each of the following for AP Biology? Helping students:</i>	<i>Less than average emphasis</i>	<i>Slightly less than average emphasis</i>	<i>About average emphasis</i>	<i>Slightly more than average emphasis</i>	<i>More than average emphasis</i>
a. Learn facts and terminology	1	2	3	4	5
b. Understand key concepts	1	2	3	4	5
c. Learn scientific methods	1	2	3	4	5
d. Develop scientific reasoning skills	1	2	3	4	5
e. Communicate biological concepts effectively	1	2	3	4	5
f. Develop interest in biology	1	2	3	4	5

<i>2. How often do you do each of the following with your AP Biology students?</i>	<i>Hardly ever</i>	<i>Several times a year</i>	<i>Once or twice a month</i>	<i>Once or twice a week</i>	<i>Almost every class session/period</i>
a. Lecture	1	2	3	4	5
b. Teacher-led whole-group discussions	1	2	3	4	5
c. Provide instruction to small groups of students	1	2	3	4	5
d. Provide instruction to individual students	1	2	3	4	5
e. Provide summaries of key concepts to accompany class notes	1	2	3	4	5
f. Teach test-taking strategies	1	2	3	4	5
g. Make group assignments	1	2	3	4	5
h. Use additional materials (e.g., films) to illustrate a biological theory/concept	1	2	3	4	5

<i>3. How often do you use the following kinds of assessments with your AP Biology students?</i>	<i>Hardly ever</i>	<i>Several times a year</i>	<i>Once or twice a month</i>	<i>Once or twice a week</i>	<i>Almost every class session/period</i>
a. Multiple-choice tests	1	2	3	4	5
b. Tests requiring sentence- or paragraph-length responses	1	2	3	4	5
c. Tests requiring lengthy written responses	1	2	3	4	5
d. Laboratory notebooks or journals	1	2	3	4	5
e. Presentations by students	1	2	3	4	5
f. Independent research/projects by students	1	2	3	4	5

<i>4. How often do students receive each of the following kinds of feedback on their tests or assignments for your AP classes?</i>	<i>Hardly ever</i>	<i>Several times a year</i>	<i>Once or twice a month</i>	<i>Once or twice a week</i>	<i>Almost every class session/period</i>
a. Numerical or letter grades	1	2	3	4	5
b. Phrase- or sentence-length descriptions of their performance	1	2	3	4	5
c. Paragraph-length descriptions of strengths and weaknesses	1	2	3	4	5
d. Page-length descriptions of strengths and weaknesses	1	2	3	4	5
e. Discussion of areas needing improvement	1	2	3	4	5
f. Comparison of performance with that of the class as a whole	1	2	3	4	5

5. How often are your AP Biology students asked to do each of the following?	Hardly ever	Several times a year	Once or twice a month	Once or twice a week	Almost every class session/period
a. Conduct an experiment	1	2	3	4	5
b. Lead other students in systematic observations	1	2	3	4	5
c. Submit reports on experiments or observations	1	2	3	4	5
d. Discuss current issues and events related to AP Biology	1	2	3	4	5
e. Design and conduct their own science projects	1	2	3	4	5
f. Discuss controversial theories and innovations	1	2	3	4	5
g. Participate in various competitions (e.g., science fairs)	1	2	3	4	5
h. Work on biology exercises or problems	1	2	3	4	5
i. Explain reasoning or thinking	1	2	3	4	5
j. Apply biology concepts to real or simulated real-world problems	1	2	3	4	5

6. Are computers used in your AP Biology class(es) in any of the following ways?	No	Yes
a. Researching information on the Internet (by students)	1	2
b. Researching information on the Internet (teacher)	1	2
c. Simulation and modeling	1	2
d. Data analysis	1	2

7. On average, how many hours per week do you spend preparing for your AP Biology class(es)?
- 0–3 hours per week
  - 4–9 hours per week
  - 10–15 hours per week
  - More than 15 hours per week
8. About how many hours each week do you expect a student to spend doing AP Biology homework (including assigned reading)?
- Less than 5 hours per week
  - 5–10 hours per week
  - More than 10 hours per week

## Section 2—Content Coverage

9. In teaching AP Biology, would you rather...
- Cover each potential topic on the examination, even if only briefly; or
  - Cover some topics very thoroughly, even if this means not covering certain topics at all?

10. In comparison to the other topics listed below, how much emphasis do you place on each of the following in your AP Biology class(es)?	Less than average emphasis	Slightly less than average emphasis	About average emphasis	Slightly more than average emphasis	More than average emphasis
a. Chemistry of Life (e.g., water, enzymes)	1	2	3	4	5
b. Cells (e.g., membranes, subcellular organization)	1	2	3	4	5
c. Cellular Energy Processes (e.g., photosynthesis)	1	2	3	4	5
d. Heredity (e.g., inheritance patterns)	1	2	3	4	5
e. Molecular Genetics (e.g., gene regulation)	1	2	3	4	5
f. Evolutionary Biology (e.g., evidence of evolution)	1	2	3	4	5
g. Diversity of Organisms (e.g., phylogenetic classification)	1	2	3	4	5
h. Structure and Function of Plants and Animals (e.g., response to the environment)	1	2	3	4	5
i. Ecology (e.g., population dynamics)	1	2	3	4	5

11. In question 10 (above), which are the most difficult topics for students to learn? Write the letter of the topic in the spaces below.

- \_\_\_ most difficult
- \_\_\_ second most difficult
- \_\_\_ third most difficult

12. In comparison to the other themes listed below, how much emphasis do you place on each of the following in your AP Biology class(es)?	Less than average emphasis	Slightly less than average emphasis	About average emphasis	Slightly more than average emphasis	More than average emphasis
a. Science as a Process	1	2	3	4	5
b. Evolution	1	2	3	4	5
c. Energy Transfer	1	2	3	4	5
d. Continuity and Change	1	2	3	4	5
e. Relationship Between Structure and Function	1	2	3	4	5
f. Regulation	1	2	3	4	5
g. Interdependence in Nature	1	2	3	4	5
h. Science, Technology, and Society	1	2	3	4	5

### Section 3—Test-Specific Instructional Activities and Practices

13. When preparing students for the AP Biology Examination, do you typically focus attention...

1. More on the free-response portion of the examination?
2. More on the multiple-choice portion of the examination?
3. About equally on both portions of the examination?

14. About what proportion of classroom time is directly related to helping students pass the AP Exam (e.g., reviewing AP Biology practice exams)...	Less than 20 percent	21–40 percent	41–60 percent	61–80 percent	More than 80 percent
a. Throughout the school year?	1	2	3	4	5
b. In the month before the AP Exam?	1	2	3	4	5

15. In the month before the AP Exam, how many hours per week do you...	None	Less than 4 hours	4–9 hours	10–20 hours	More than 20 hours
a. Review material for the AP Exam after school?	1	2	3	4	5
b. Administer or help students review old AP exams?	1	2	3	4	5
c. Think most students participate in student-led study groups outside of class time without the teacher?	1	2	3	4	5
d. Think most students spend studying course material on their own, including practice tests?	1	2	3	4	5

### Section 4—School Context

16. How were you assigned to teach AP Biology? Circle only one number.

1. It was assigned to me.
2. I volunteered to teach it.

17. How many AP Biology classes are you teaching this year?

1. One
2. Two
3. Three
4. Four
5. Five or more

18. Which schedule option **best** describes the AP course you are teaching in the 2002-03 academic year?
1. A 30–60 minute session **every** school day throughout the year.
  2. A 61–110 minute session **every** school day throughout the year.
  3. A 61–110 minute session **every other** school day throughout the school year.
  4. The complete course compressed in the fall 2002 semester (with or without review in spring 2003).
  5. The complete course compressed into the spring 2003 semester.

19. Indicate the adequacy of the following resources for AP Biology at your school.	Poor	Fair	Good	Excellent
a. The facilities (laboratories, lab tables, sinks, etc.).	1	2	3	4
b. The supplies (specimens, etc.).	1	2	3	4
c. Instructional materials or other resources.	1	2	3	4

20. To what extent do the following practices describe the situation in your school?	Strongly Disagree	Disagree	Agree	Strongly Agree
a. I am encouraged to experiment with my teaching.	1	2	3	4
b. I have a wide degree of autonomy in selecting course content.	1	2	3	4
c. I am encouraged to coordinate the content of my courses with other teachers in my department.	1	2	3	4
d. There is a strong commitment to AP courses in my department.	1	2	3	4

21. Does your school have any special procedures or criteria for enrollment for AP Biology class(es)?

1. No, enrollment is completely open  $\longrightarrow$  (skip to question 22)
2. Yes (continue to item 21a)  $\longrightarrow$

21a. If you answered "yes" above, please indicate the degree to which each of the following is a factor in deciding student enrollment in your AP Biology class(es).		Not a factor	A minor factor	A major factor
a.	Completion of a prerequisite course (such as Honors Biology).	1	2	3
b.	Achievement of required grades in prior course(s).	1	2	3
c.	Recommendation by teachers.	1	2	3
d.	Earning a qualifying score on PSAT (or other test).	1	2	3
e.	Meeting requirements of school-designed admission policy.	1	2	3
f.	Self-nomination.	1	2	3
g.	Recommendation by parent or guardian	1	2	3
h.	Recommendation by guidance counselor/school administrator.	1	2	3
i.	Entering through vertical teaming.	1	2	3

22. Are there initiatives at your school to increase the enrollment of minority students in AP Biology (or other AP classes)?

1. No  $\longrightarrow$
2. Yes  $\longrightarrow$

<p>Our school employs the following initiatives: Please mark all that apply.</p> <p><input type="checkbox"/> Recruitment by teachers</p> <p><input type="checkbox"/> Meetings with parents</p> <p><input type="checkbox"/> Special mailings or communications</p> <p><input type="checkbox"/> Recruitment by guidance counselor</p>	<p>No initiatives exist because...</p> <p>Please mark all that apply.</p> <p><input type="checkbox"/> Most students in this school are minority students</p> <p><input type="checkbox"/> We have few, if any, minority students in this school</p> <p><input type="checkbox"/> Minority enrollment in AP classes is sufficient already</p>
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23. Which **best** describes students who take the AP Biology Examination at your school? *Circle only one response.*
- All students who take the course **must** also take the AP Exam.
  - Only those students who do well in the course are **encouraged** to take the AP Exam.
  - All students who take the course are **encouraged** to take the AP Exam.
  - Students who take the course are left to decide whether to take the AP Exam.
24. On average, what percentage of students in your AP Biology class(es) takes the AP Biology Examination?
- Less than 50 percent of students
  - Between 51–74 percent of students
  - Between 75–99 percent of students
  - 100 percent of students

## Section 5—Classroom Context

25. How much control do you feel you have in your AP Biology class(es) in selecting each of the following?		Little or no control	Some control	Substantial control	Complete control
a.	Textbook(s)	1	2	3	4
b.	Supplemental instructional materials	1	2	3	4
c.	Content, topics, and skills to be taught	1	2	3	4
d.	Teaching techniques	1	2	3	4

26. What is the average class size (number of students) in your AP Biology class(es) this year?
- Fewer than 15 students
  - 16–20 students
  - 21–30 students
  - More than 30 students

## Section 6—Your Professional Development Experiences and Training

27. In what AP professional development activities have you participated within the last 5 years?		No	Yes, once	Yes, more than once
a.	Attended AP Workshop (1–2 day events)	1	2	3
b.	Attended AP Institute (week, summer)	1	2	3
c.	Collaborated with mentor teacher	1	2	3
d.	Reviewed released AP Exams	1	2	3
e.	Reviewed <i>AP Biology Teachers Guide</i>	1	2	3
f.	Reviewed <i>AP Course Description: Biology</i>	1	2	3
g.	Took college-level course in Biology or other related subject	1	2	3
h.	Networked with AP Biology teachers at different schools	1	2	3
i.	Participated in AP Reading(s)	1	2	3
j.	Consulted for an AP Workshop (event for 1–2 days)	1	2	3
k.	Taught in an AP Institute (event for 1 week or longer)	1	2	3

28. How much influence has each of the following resources had on your teaching of AP Biology?	Not at all influential	Slightly influential	Somewhat influential	Very influential	Extremely influential
a. Exemplary syllabi from other AP Biology classes	1	2	3	4	5
b. AP Exam essay topics and/or scoring rubrics	1	2	3	4	5
c. Supplementary texts, workbooks, etc.	1	2	3	4	5
d. Biology Lab Manual and/or Teacher's Version of the Biology Lab Manual	1	2	3	4	5
e. Discussions with colleagues and mentors	1	2	3	4	5
f. Teaching resources through the Internet (e.g., sample lessons, readings, etc.)	1	2	3	4	5
g. Conversations through the Internet about teaching and learning	1	2	3	4	5

29. Please tell us about the general areas in which you have the need for further education/training in AP Biology.	Not an important training need	Somewhat important training need	Important training need	Critical training need
a. Understanding specific areas of course content	1	2	3	4
b. Developing specific skills (e.g., analytical writing, advanced problem solving, using the computer)	1	2	3	4
c. Learning alternative methods for presenting content or developing skills	1	2	3	4
d. Understanding the concepts behind the AP syllabus topics/labs and having alternative instructional strategies for teaching them	1	2	3	4
e. Communicating the AP content and target skills to students with different levels of preparation	1	2	3	4
f. Preparing students for the AP Exam	1	2	3	4
g. Covering the course content in the time available; what can be dropped or modified?	1	2	3	4
h. Accurately assessing student performance and proficiency levels during the AP course	1	2	3	4
i. Integrating new technologies into my AP teaching	1	2	3	4

## Section 7—About You

30. Counting this school year, how long have you been teaching?
- 0–3 years
  - 4–6 years
  - 7–10 years
  - More than 10 years
31. Counting this school year, how many years have you been teaching AP Biology?
- 0–3 years
  - 4–6 years
  - 7–10 years
  - More than 10 years
32. In which academic (school) years did you teach AP U.S. Biology? (Check all that apply)
- 1998-99
- 1999-00
- 2000-01
- 2001-02
- 2002-03

33. What is the highest level of education you have attained?
1. Bachelor's degree
  2. Bachelor's degree plus further credits
  3. Master's degree
  4. Master's degree plus further credits
  5. Doctorate or professional degree (e.g., Ph.D., Ed.D., J.D., M.D.)
34. What was/were your college major(s)?
1. Biology
  2. Other science (e.g., Physiology, Chemistry)
  3. Other
35. What type of teaching certificate do you have? *Please mark only one (your highest certification).*
1. I don't have a certificate
  2. Regular or standard state certificate offered in the state
  3. Advanced professional certificate (e.g., National Board for Professional Teaching Standards)
  4. Other teaching certificate
36. What is your age?
1. 25 or under
  2. 26–35
  3. 36–45
  4. 46–55
  5. 56–65
  6. 66 or older
37. What is your ethnicity?
1. African American or Black
  2. American Indian/Native American
  3. Asian American/Asian Indian/Pacific Islander
  4. Caucasian (non-Hispanic)
  5. Latino, Latin American, Puerto Rican, Hispanic, Chicano
38. Are you...?
1. Male
  2. Female
39. Do you have any comments for us regarding your experience as an AP Biology teacher? Is there anything you do as an AP Biology teacher that you feel is especially noteworthy? Please use the space below.

## Appendix E: Survey of AP U.S. History Teachers

### Section 1—Instructional and Assessment Practices

*Please circle one number for each item*

<i>1. In comparison to the other objectives listed below, how much emphasis do you place on each of the following for AP U.S. History? Helping students:</i>	<i>Less than average emphasis</i>	<i>Slightly less than average emphasis</i>	<i>About average emphasis</i>	<i>Slightly more than average emphasis</i>	<i>More than average emphasis</i>
a. Learn facts, dates, events, and terminology	1	2	3	4	5
b. Understand themes	1	2	3	4	5
c. View history as multiple perspectives/stories	1	2	3	4	5
d. Develop skills for stating and supporting claims	1	2	3	4	5
e. Develop historical research skills and techniques	1	2	3	4	5
f. Develop interest in U.S. History	1	2	3	4	5

<b>2. How often do you do each of the following with your AP U.S. History students?</b>	<i>Hardly ever</i>	<i>Several times a year</i>	<i>Once or twice a month</i>	<i>Once or twice a week</i>	<i>Almost every class session/period</i>
a. Lecture	1	2	3	4	5
b. Teacher-led whole-group discussions	1	2	3	4	5
c. Provide instruction to small groups of students	1	2	3	4	5
d. Provide instruction to individual students	1	2	3	4	5
e. Provide summaries of key concepts to accompany class notes.	1	2	3	4	5
f. Teach test-taking strategies	1	2	3	4	5
g. Make group assignments	1	2	3	4	5
h. Use additional materials (e.g., films or art) to illustrate a historical period	1	2	3	4	5

  

<b>3. How often do you use the following kinds of assessments with your AP U.S. History students?</b>	<i>Hardly ever</i>	<i>Several times a year</i>	<i>Once or twice a month</i>	<i>Once or twice a week</i>	<i>Almost every class session/period</i>
a. Multiple-choice tests	1	2	3	4	5
b. Tests requiring sentence- or paragraph-length responses	1	2	3	4	5
c. Using document-based evidence to organize an essay (e.g., preparing for the DBQ)	1	2	3	4	5
d. Presentations by students	1	2	3	4	5
e. Independent research/projects by students	1	2	3	4	5

  

<b>4. How often do students receive each of the following kinds of feedback on their tests or assignments for your AP classes?</b>	<i>Hardly ever</i>	<i>Several times a year</i>	<i>Once or twice a month</i>	<i>Once or twice a week</i>	<i>Almost every class session/period</i>
a. Numerical or letter grades	1	2	3	4	5
b. Phrase- or sentence-length descriptions of their performance	1	2	3	4	5
c. Paragraph-length descriptions of strengths and weaknesses	1	2	3	4	5
d. Page-length descriptions of strengths and weaknesses	1	2	3	4	5
e. Discussion of areas needing improvement	1	2	3	4	5
f. Comparison of performance with that of the class as a whole	1	2	3	4	5

  

<b>5. How often are your AP U.S. History students asked to do each of the following?</b>	<i>Hardly ever</i>	<i>Several times a year</i>	<i>Once or twice a month</i>	<i>Once or twice a week</i>	<i>Almost every class session/period</i>
a. Submit thematic essays on specific historical topics (e.g., slavery, suffrage)	1	2	3	4	5
b. Use tools of analysis to generate hypotheses or develop arguments	1	2	3	4	5
c. Discuss current issues and events related to AP U.S. History	1	2	3	4	5
d. Discuss controversial events or themes	1	2	3	4	5
e. Analyze documents or evaluate essays	1	2	3	4	5
f. Participate in various competitions (e.g., re-enactments, debates)	1	2	3	4	5
g. Work on history exercises or problems	1	2	3	4	5
h. Explain reasoning or thinking	1	2	3	4	5



6. Are computers used in your AP U.S. History class(es) in any of the following ways?	No	Yes
a. Researching information on the Internet (by students)	1	2
b. Researching information on the Internet (teacher)	1	2

7. On average, how many hours per week do you spend preparing for your AP U.S. History class(es)?
- 0–3 hours per week
  - 4–9 hours per week
  - 10–15 hours per week
  - More than 15 hours per week
8. About how many hours each week do you expect a student to spend doing AP U.S. History homework (including assigned reading)?
- Less than 5 hours per week
  - 5–10 hours per week
  - More than 10 hours per week

## Section 2—Content Coverage

9. In teaching AP U.S. History, would you rather...
- Cover each potential topic on the examination, even if only briefly, or
  - Cover some topics very thoroughly, even if this means not covering certain topics at all?

10. In comparison to the other topics listed below, how much emphasis do you place on each of the following in your AP U.S. History class(es)?	Less than average emphasis	Slightly less than average emphasis	About average emphasis	Slightly more than average emphasis	More than average emphasis
a. Discovery and Settlement of the New World, 1492–1650	1	2	3	4	5
b. America and the British Empire, 1650–1754	1	2	3	4	5
c. Colonial Society in the Mid-Eighteenth Century	1	2	3	4	5
d. The American Revolution, 1775–1783	1	2	3	4	5
e. National and Economic Expansion	1	2	3	4	5
f. Age of Jackson, 1828–1848	1	2	3	4	5
g. Creating an American Culture	1	2	3	4	5
h. Civil War	1	2	3	4	5
i. New South and the Last West	1	2	3	4	5
j. Industrialization and Corporate Consolidation	1	2	3	4	5
k. Intellectual and Cultural Movements	1	2	3	4	5
l. National Politics, 1877–1896: The Gilded Age	1	2	3	4	5
m. The First World War	1	2	3	4	5
n. New Era: The 1920s	1	2	3	4	5
o. Depression, 1929–1933	1	2	3	4	5
p. The Second World War	1	2	3	4	5
q. Truman and the Cold War	1	2	3	4	5
r. Kennedy's New Frontier; Johnson's Great Society	1	2	3	4	5
s. The United States Since 1974	1	2	3	4	5

11. In question 10 (above), which are the most difficult topics for students to learn? Write the letter of the topic in the spaces below.
- \_\_\_ most difficult  
 \_\_\_ second most difficult  
 \_\_\_ third most difficult

12. In comparison to the other subtopics listed below, how much emphasis do you place on each of the following in your AP U.S. History class(es)?

	<i>Less than average emphasis</i>	<i>Slightly less than average emphasis</i>	<i>About average emphasis</i>	<i>Slightly more than average emphasis</i>	<i>More than average emphasis</i>
<i>America and the British Empire, 1650–1754</i>					
a. Chesapeake Country	1	2	3	4	5
b. Growth of New England	1	2	3	4	5
c. Restoration Colonies	1	2	3	4	5
d. Mercantilism; the Dominion of New England	1	2	3	4	5
e. Origins of Slavery	1	2	3	4	5
<i>Intellectual and Cultural Movements</i>					
f. Education: Colleges and Universities	1	2	3	4	5
g. Education: Scientific Advances	1	2	3	4	5
h. Professionalism and the Social Sciences	1	2	3	4	5
i. Realism in Literature and Art	1	2	3	4	5
j. Mass Culture: Use of Leisure	1	2	3	4	5
k. Mass Culture: Publishing and Journalism	1	2	3	4	5

### Section 3—Test-Specific Instructional Activities and Practices

13. When preparing students for the AP U.S. History Examination, do you typically focus attention...

1. More on the free-response portion of the examination?
2. More on the multiple-choice portion of the examination?
3. About equally on both portions of the examination?

14. About what proportion of classroom time is directly related to helping students pass the AP Exam (e.g., reviewing AP U.S. History practice exams)...

	<i>Less than 20 percent</i>	<i>21–40 percent</i>	<i>41–60 percent</i>	<i>61–80 percent</i>	<i>More than 80 percent</i>
a. Throughout the school year?	1	2	3	4	5
b. In the month before the AP Exam?	1	2	3	4	5

15. In the month before the AP Exam, how many hours per week do you...

	<i>None</i>	<i>Less than 4 hours</i>	<i>4–9 hours</i>	<i>10–20 hours</i>	<i>More than 20 hours</i>
a. Review material for the AP Exam after school?	1	2	3	4	5
b. Administer or help students review old AP Exams?	1	2	3	4	5
c. Think most students participate in student-led study groups outside of class time without the teacher?	1	2	3	4	5
d. Think most students spend studying course material on their own, including practice tests?	1	2	3	4	5

### Section 4—School Context

16. How were you assigned to teach AP U.S. History? Circle only one number.

1. It was assigned to me.
2. I volunteered to teach it.

17. How many AP U.S. History classes are you teaching this year?

1. One
2. Two
3. Three
4. Four
5. Five or more

18. Which schedule option **best** describes the AP course you are teaching in the 2002-03 academic year?
1. A 30–60 minute session **every** school day throughout the year
  2. A 61–110 minute session **every** school day throughout the school year
  3. A 61–110 minute session **every other** school day throughout the school year
  4. The complete course compressed in the fall 2002 semester (with or without review in spring 2003)
  5. The complete course compressed into the spring 2003 semester
19. Please indicate which statement most accurately represents how well your school system provides you with the instructional materials and other resources you need to teach your AP U.S. History class(es)?
1. I get hardly any of the resources I need.
  2. I get some of the resources I need.
  3. I get most of the resources I need.
  4. I get nearly all of the resources I need.

20. To what extent do the following practices describe the situation in your school?	Strongly disagree	Disagree	Agree	Strongly agree
a. I am encouraged to experiment with my teaching.	1	2	3	4
b. I have a wide degree of autonomy in selecting course content.	1	2	3	4
c. I am encouraged to coordinate the content of my courses with other teachers in my department.	1	2	3	4
d. There is a strong commitment to AP courses in my department.	1	2	3	4

21. Does your school have any special procedures or criteria for enrollment for AP U.S. History class(es)?
1. No, enrollment is completely open  $\longrightarrow$  (skip to question 22)
  2. Yes (continue to item 21a)  $\longrightarrow$

21a. If you answered "yes" above, please indicate the degree to which each of the following is a factor in deciding student enrollment in your AP U.S. History class(es).	Not a factor	A minor factor	A major factor
a. Completion of a prerequisite course (such as Honors History)	1	2	3
b. Achievement of required grades in prior course(s)	1	2	3
c. Recommendation by teachers	1	2	3
d. Earning a qualifying score on PSAT/NMSQT (or other test)	1	2	3
e. Meeting requirements of school-designed admission policy	1	2	3
f. Self-nomination	1	2	3
g. Recommendation by parent or guardian	1	2	3
h. Recommendation by guidance counselor/school administration	1	2	3
i. Entering through vertical teaming	1	2	3

22. Are there initiatives at your school to increase the enrollment of minority students in AP U.S. History (or other AP classes)?

1. No
2. Yes

Our school employs the following initiatives: <i>Please mark all that apply.</i> <input type="checkbox"/> Recruitment by teachers <input type="checkbox"/> Meetings with parents <input type="checkbox"/> Special mailings or communications <input type="checkbox"/> Recruitment by guidance counselor	No initiatives exist because... <i>Please mark all that apply.</i> <input type="checkbox"/> Most students in this school are minority students <input type="checkbox"/> We have few, if any, minority students in this school <input type="checkbox"/> Minority enrollment in AP classes is sufficient already
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23. Which **best** describes students who take the AP U.S. History Examination at your school? *Circle only one response.*

1. All students who take the course **must** also take the AP Exam.
2. Only those students who do well in the course are **encouraged** to take the AP Exam.
3. All students who take the course are **encouraged** to take the AP Exam.
4. Students who take the class are left to decide whether to take the AP Exam.

24. On average, what percentage of students in your AP U.S. History class(es) takes the AP U.S. History Examination?

1. Less than 50 percent of students
2. Between 51–74 percent of students
3. Between 75–99 percent of students
4. 100 percent of students

## Section 5—Classroom Context

25. How much control do you feel you have in your AP U.S. History class(es) in selecting each of the following?	Little or no control	Some control	Substantial control	Complete control
a. Textbook(s)	1	2	3	4
b. Supplemental instructional materials	1	2	3	4
c. Content, topics, and skills to be taught	1	2	3	4
d. Teaching techniques	1	2	3	4

26. What is the average class size (number of students) in your AP U.S. History class(es) this year?

1. Fewer than 15 students
2. 16–20 students
3. 21–30 students
4. More than 30 students

## Section 6—Your Professional Development Experiences and Training

27. In what AP professional development activities have you participated within the last five years?	No	Yes, once	Yes, more than once
a. Attended AP Workshop (1–2 day events)	1	2	3
b. Attended AP Institute (week, summer)	1	2	3
c. Collaborated with mentor teacher	1	2	3
d. Reviewed released AP Exams	1	2	3
e. Reviewed <i>AP U.S. History Teachers Guide</i>	1	2	3
f. Reviewed <i>AP Course Description: U.S. History</i>	1	2	3
g. Took college-level course in U.S. History or related course	1	2	3
h. Networked with AP U.S. History teachers at other schools	1	2	3
i. Participated in AP Reading(s)	1	2	3
j. Consulted for an AP Workshop (event for 1–2 days)	1	2	3
k. Taught in an AP Institute (event for 1 week or longer)	1	2	3

28. How much influence has each of the following resources had on your teaching of AP U.S. History?	Not at all influential	Slightly influential	Somewhat influential	Very influential	Extremely influential
a. Exemplary syllabi from other AP U.S. History classes	1	2	3	4	5
b. AP Exam essay topics and/or scoring rubrics	1	2	3	4	5
c. Supplementary texts, workbooks, etc.	1	2	3	4	5
d. Discussions with colleagues and mentors	1	2	3	4	5
e. Teaching resources through the Internet (e.g., sample lessons, readings, etc.)	1	2	3	4	5
f. Conversations through the Internet about teaching and learning	1	2	3	4	5

29. Please tell us about the general areas in which you have the need for further education/training in AP U.S. History.	Not an important training need	Somewhat important training need	Important training need	Critical training need
a. Understanding specific areas of course content	1	2	3	4
b. Developing specific skills (e.g., analytical writing, using the computer)	1	2	3	4
c. Learning alternative methods for presenting content or developing skills	1	2	3	4
d. Understanding the concepts behind the AP syllabus topics and having alternative instructional strategies for teaching them	1	2	3	4
e. Communicating the AP content and target skills to students with different levels of preparation	1	2	3	4
f. Preparing students for the AP Exam	1	2	3	4
g. Covering the course content in the time available; what can be dropped or modified?	1	2	3	4
h. Accurately assessing student performance and proficiency levels during the AP course	1	2	3	4
i. Integrating new technologies into my AP teaching	1	2	3	4

## Section 7—About You

30. Counting this school year, how long have you been teaching?

1. 0–3 years
2. 4–6 years
3. 7–10 years
4. More than 10 years

31. Counting this school year, how many years have you been teaching AP U.S. History?

1. 0–3 years
2. 4–6 years
3. 7–10 years
4. More than 10 years

32. In which academic (school) years did you teach AP U.S. History? (Check all that apply)

- 1998-99
- 1999-00
- 2000-01
- 2001-02
- 2002-03

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33. What is the highest level of education you have attained?
1. Bachelor's degree
  2. Bachelor's degree plus further credits
  3. Master's degree
  4. Master's degree plus further credits
  5. Doctorate or professional degree (e.g., Ph.D., Ed.D., J.D., M.D.)
34. What was/were your college major(s)?
1. History
  2. Other social science (e.g., Political Science, Education, Economics)
  3. Other
35. What type of teaching certificate do you have? *Please mark only one (your highest certification).*
1. I don't have a teaching certificate
  2. Regular or standard state certificate offered in the state
  3. Advanced professional certificate (e.g., National Board for Professional Teaching Standards)
  4. Other teaching certificate
36. What is your age?
1. 25 or under
  2. 26–35
  3. 36–45
  4. 46–55
  5. 56–65
  6. 66 or older
37. What is your ethnicity?
1. African American or Black
  2. American Indian/Native American
  3. Asian American/Asian Indian/Pacific Islander
  4. Caucasian (non-Hispanic)
  5. Latino, Latin American, Puerto Rican, Hispanic, Chicano
38. Are you...?
1. Male
  2. Female
39. Do you have any comments for us regarding your experience as an AP U.S. History teacher? Is there anything you do as an AP U.S. History teacher that you feel is especially noteworthy? Please use the space below.



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