Helping Students Navigate the Path to College: What High Schools Can Do

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The goal of this practice guide is to formulate specific and coherent evidence-based recommendations for use by educators addressing the challenge of increasing access to higher education. The guide provides practical, clear information on critical topics related to what schools can do to help students navigate the path to college and is based on the best available evidence as judged by the panel. Recommendations presented in this guide should not be construed to imply that no further research is warranted on the effectiveness of particular strategies for increasing access to postsecondary education.

Helping Students Navigate the Path to College: What High Schools Can Do

September 2009

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Introduction

Access to higher education remains a challenge for many students who face barriers to college entry. Low-income students and students who are potentially the first in their family to attend college have lower college enrollment rates than other students.[1] Although academic preparation accounts for some of these differences, the disparities in college-going rates persist for these groups of students even when controlling for academic preparation.[2] College access outcomes have important economic and social consequences: college graduates earn more than those with a high school degree and are more active in their communities.[3]

This guide is intended to help schools and districts develop practices to increase access to higher education. It can be useful for individuals who work in schools and districts in planning and executing strategies to improve preparation for, and access to, higher education. A panel of experts in college access programs and strategies and in research methods developed the recommendations in this guide. The guide contains specific steps on how to implement the recommendations that are targeted at school- and district-level administrators, teachers, counselors, and related education staff. The guide also indicates the level of research evidence demonstrating that each recommended practice is effective.

As with all What Works Clearinghouse (WWC) practice guide panels, this panel developed recommendations by consulting research evidence. The evidence that the panel considered in developing this document ranges from experimental evaluations of college access programs to expert analyses of college access practices. In looking for effective practices, the panel paid particular attention to high-quality experimental and quasi-experimental studies, such as those meeting the criteria of the WWC,[4] and to patterns of practices that are replicated across programs.

The research base for this guide was identified through a comprehensive search for studies evaluating college access interventions and practices. An initial search for this type of research conducted in the United States in the past 20 years (1988–2008) yielded more than 500 studies. Of these, 99 studies examined college access programs or related practices for high school students and were eligible for further review because the study design included a comparison group. These studies were reviewed by the WWC to determine whether they were consistent with WWC standards. Of the 99 studies, 16 studies met WWC standards with or without reservations. These 16 studies of 10 different college access programs represent the strongest evidence of the effectiveness of college access programs.

To indicate the strength of evidence supporting each recommendation, the panel relied on the WWC standards for determining levels of evidence, described below and in Table 1. It is important for the reader to remember that the level of evidence rating is not a judgment by the panel on how effective each of these recommended practices will be when implemented, nor are they a judgment of what prior research has to say about their effectiveness. The level of evidence ratings reflect the panel's judgment of the quality of the existing literature to support a causal claim that when these practices have been implemented in the past, positive effects on student academic outcomes were observed.

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1. Choy (2002); National Center for Education Statistics (2008).

2. Ellwood and Kane (2000); Smith et al. (1997).

3. Baum and Ma (2007); Kane and Rouse (1995); National Conference on Citizenship (2006); U.S. Census Bureau (2002).

4. http://www.whatworks.ed.gov/

Table 1. Institute of Education Sciences levels of evidence for practice guides

Strong	In general, characterization of the evidence for a recommendation as strong requires both studies with high internal validity (i.e., studies whose designs can support causal conclusions) and studies with high external validity (i.e., studies that in total include enough of the range of participants and settings on which the recommendation is focused to support the conclusion that the results can be generalized to those participants and settings). Strong evidence for this practice guide is operationalized as: • A systematic review of research that generally meets WWC standards (see http://ies.ed.gov/ncee/wwc/) and supports the effectiveness of a program, practice, or approach with no contradictory evidence of similar quality; OR • Several well-designed, randomized controlled trials or well-designed quasi-experiments that generally meet WWC standards and support the effectiveness of a program, practice, or approach, with no contradictory evidence of similar quality; OR • One large, well-designed, randomized controlled, multisite trial that meets WWC standards and supports the effectiveness of a program, practice, or approach, with no contradictory evidence of similar quality; OR • For assessments, evidence of reliability and validity that meets the Standards for Educational and Psychological Testing.[a]
Moderate	In general, characterization of the evidence for a recommendation as moderate requires studies with high internal validity but moderate external validity or studies with high external validity but moderate internal validity. In other words, moderate evidence is derived from studies that support strong causal conclusions but generalization is uncertain or studies that support the generality of a relationship but the causality is uncertain. Moderate evidence for this practice guide is operationalized as: • Experiments or quasi-experiments generally meeting WWC standards and supporting the effectiveness of a program, practice, or approach with small sample sizes and/or other conditions of implementation or analysis that limit generalizability and no contrary evidence; OR • Comparison group studies that do not demonstrate equivalence of groups at pretest and, therefore, do not meet WWC standards but that (1) consistently show enhanced outcomes for participants experiencing a particular program, practice, or approach and (2) have no major flaws related to internal validity other than lack of demonstrated equivalence at pretest (e.g., only one teacher or one class per condition, unequal amounts of instructional time, or highly biased outcome measures); OR • Correlational research with strong statistical controls for selection bias and for discerning influence of endogenous factors and no contrary evidence; OR • For assessments, evidence of reliability that meets the Standards for Educational and Psychological Testing[b] but with evidence of validity from samples not adequately representative of the population on which the recommendation is focused.
Low	In general, characterization of the evidence for a recommendation as low means that the recommendation is based on expert opinion derived from strong findings or theories in related areas and/or expert opinion buttressed by direct evidence that does not rise to the moderate or strong level. Low evidence is operationalized as evidence not meeting the standards for the moderate or strong level.

a. American Educational Research Association, American Psychological Association, and National Council on Measurement in Education (1999).

b. Ibid.

They do not reflect judgments of the relative strength of these positive effects or the relative importance of the individual recommendations.

A *strong* rating refers to consistent and generalizable evidence that an intervention strategy or program improves outcomes.[5]

A *moderate* rating refers either to evidence from studies that allow strong causal conclusions but cannot be generalized with assurance to the population on which a recommendation is focused (perhaps because the findings have not been widely replicated) or to evidence from studies that are generalizable but have more causal ambiguity than that offered by experimental designs (e.g., statistical models of correlational data or group comparison designs for which equivalence of the groups at pretest is uncertain).

A *low* rating refers to evidence from studies that do not meet the standards for moderate or strong evidence and/or expert opinion based on reasonable extrapolations from research and theory.

A low level of evidence rating does not indicate that the recommendation is any less important than other recommendations with a strong or moderate rating. Rather, it suggests that the panel cannot point to a body of research that demonstrates its effect on student achievement. In some cases, this simply means that the

recommended practices would be difficult to study in a rigorous, experimental fashion; in other cases, it means that researchers have not yet studied this practice, or that there is weak or conflicting evidence of effectiveness.[6]

Three of the five recommendations made by the panel received a low evidence rating. For example, recommendation 2, which describes the use of assessments to measure college readiness, was determined to have a low level of evidence (see Table 2). This means that there are few existing studies designed to test, in a discrete and valid manner, the causal relation between the utilization of assessment measures and college going. Nevertheless, the authors of this practice guide, based on expert judgment and knowledge of practice, consider the use of assessment to be a critical component of a well-implemented strategic plan for increasing access to college. Hence, although the level of evidence rating is low, the panel has included assessment as one of the five recommended practices.

Citations in the text refer to studies of programs that have implemented various practices. Not all of these programs contribute to the level of evidence rating: although some of these programs have had rigorous evaluations of their impacts, others have not. Furthermore, some of the programs that have been rigorously evaluated have found positive effects on college access outcomes; others have not.

5. Following WWC guidelines, improved outcomes are indicated by either a positive, statistically significant effect or a positive, substantively important effect size (i.e., greater than 0.25). See the WWC guidelines at http://ies.ed.gov/ncee/wwc/pdf/wwc_version1_standards.pdf.

6. For more information, see the WWC Frequently Asked Questions page for practice guides, http://ies.ed.gov/ncee/wwc/references/idocviewer/doc.aspx?docid=15&tocid=3.

The What Works Clearinghouse standards and their relevance to this guide

In terms of the levels of evidence indicated in Table 1, the panel relied on WWC evidence standards to assess the quality of evidence supporting educational programs and practices. The WWC addresses evidence for the causal validity of instructional programs and practices according to WWC standards. Information about these standards is available at http://ies.ed.gov/ncee/wwc/references/idocviewer/doc.aspx?docid=19&tocid=1.[7] The technical quality of each study is rated and placed into one of four categories:

- *Meets Evidence Standards* for randomized controlled trials and regression discontinuity studies that provide the strongest evidence of causal validity.

- *Meets Evidence Standards with Reservations* for all quasi-experimental studies with no design flaws and randomized controlled trials that have problems with randomization, attrition, or disruption.

- *Does Not Meet Evidence Standards* for studies that do not provide strong evidence of causal validity.

- *Potentially Meets Standards* for studies that require additional information to determine whether they meet evidence standards; typically refers to quasi-experimental studies that do not provide sufficient information to assess baseline equivalence.

Following the recommendations and suggestions for carrying out the recommendations, Appendix D presents more information on the research evidence that supports each recommendation.

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7. Reviews of studies for this practice guide applied version 1.0 WWC standards. Interested readers can access these standards at http://ies.ed.gov/ncee/wwc/references/iDocViewer/Doc.aspx?docId=20&tocId=1.

Helping Students Navigate the Path to College: What High Schools Can Do

Overview

A well-educated workforce is critical for maintaining the economic competitiveness of the United States. The strength of our economy hinges on the ability of our education system to meet the demand for highly educated workers. As a result, there are persistent calls to improve access to higher education and to encourage students and adults to continue their education beyond high school.[8] However, reaching college remains a challenge for many low-income and potentially first-generation students who (a) are not academically prepared or (b) lack knowledge about how to apply to, and pay for, college.[9] College enrollment rates for these students continue to lag behind those of their peers despite overall improvements in college attendance.

The challenge of improving the college-going rate can be traced to two key difficulties. First, students must be academically prepared for college by 12th grade. The opportunities to academically prepare for college narrow as students progress through high school. If students do not start taking college preparation courses in the 9th grade, they will be less likely to enroll in college. In addition, students who are not reading or doing math at grade level will not be prepared for college-level work.[10] The problem is made more difficult if students and their families are unaware that their performance is inadequate. Schools need to ensure that students are on the path to college beginning in 9th grade, or earlier, and that they stay on that path throughout high school.

Second, many students do not take the necessary steps during high school to prepare for and enter college because they are not aware of these steps or because they lack the guidance or support needed to complete them.[11] In addition to the academic obstacles discussed earlier, students need to complete a number of discrete steps in high school to enroll in college, such as taking college entrance exams, searching for colleges, applying for financial aid, submitting college applications, and selecting a college. In their senior year, students have to decide where to go; how to apply; and, most important, how to pay for college. These issues should be considered, optimally, in the earlier years of high school, but in the senior year students must make decisions. Students may lack adequate advice, particularly if no one in their immediate families has completed a two- or four-year degree. Students and their families need advice from knowledgeable school staff if they are to successfully navigate the college application processes.

As a result, a large part of the obligation for enabling students to gain the academic, social, and cultural skills to gain entrance to college falls upon our teachers, counselors, and school administrators. High schools play a critical role in preparing students academically for college and assisting students through the steps to college entry. They also can take steps to influence students' access to college-going peer groups and to encourage high academic expectations of students. The college-going culture of a high school, or lack thereof, becomes important in college-going decisions. When students, teachers, and administrators openly talk about preparing for and going to college, the climate in the school can move toward college access.

8. Pathways to College Network (2004).

9. Avery and Kane (2004); Ikenberry and Hartle (1998); National Center for Education Statistics (2005); Roderick et al. (2008); U.S. General Accounting Office (1990).

10. Adelman (1999); Cabrera and La Nasa (2001); Wimberly and Noeth (2005).

11. Ikenberry and Hartle (1998); U.S. General Accounting Office (1990).

Table 2. Recommendations and corresponding levels of evidence

Recommendation	Level of evidence
Academic preparation	
1. Offer courses and curricula that prepare students for college-level work, and ensure that students understand what constitutes a college-ready curriculum by 9th grade	**Low**
2. Utilize assessment measures throughout high school so that students are aware of how prepared they are for college, and assist them in overcoming deficiencies as they are identified	**Low**
College aspirations and expectations	
3. Surround students with adults and peers who build and support their college-going aspirations	**Low**
Steps for college entry	
4. Engage and assist students in completing critical steps for college entry	**Moderate**
5. Increase families' financial awareness, and help students apply for financial aid	**Moderate**

Source: Authors' compilation based on analysis described in text.

Scope of the practice guide

The purpose of this guide is to recommend steps that educators, administrators, and policymakers can take, beginning in the 9th grade, to increase access to higher education. The guide targets high schools and school districts and focuses on effective practices that prepare students academically for college, assist them in completing the steps to college entry, and improve their likelihood of enrolling in college. The recommendations address the discrete steps that students need to take throughout high school and describe how high schools can use mentors and peers to support students' college aspirations. The panel recognizes that simply providing students with information is insufficient, and, throughout, the guide recommends that high schools offer hands-on assistance and guidance in preparing students for college.

The recommended steps derive from the characteristics of college access programs, school reforms, and policy interventions that have shown promise in increasing access to college, particularly for low-income and first-generation students. The panel focused on programs and practices with evidence of their impact on academic preparation for college (e.g., high school completion and course taking), completion of the steps for college entry (e.g., submitting college and financial aid applications), or college enrollment and attendance. Although the panel recognizes the importance of college persistence for low-income and first-generation students who are less likely than other students to complete a degree,[12] the focus of the guide and the recommended practices is on how high schools and districts can improve access to higher education. However, evidence on whether the recommended practices

impact college persistence is described when relevant.

The panel believes that every student should leave high school with the skills required to attend a two- or four-year institution. To that end, high schools must provide students with information to consider postsecondary training and to assess their readiness. Also, all high school curricula should, at a minimum, prepare students to begin taking college-level courses at a two-year institution without the need for remediation in any subject area upon entering that institution. For students who wish to enroll in a four-year institution, their high school curriculum should include options that prepare students for the more rigorous academic requirements of four-year institutions. However, we do not believe that all students should be required to complete a high school curriculum that prepares students for a four year college. Principal and district administrators should work to ensure that at all high schools, curricula alternatives exist appropriate for students who aspire to any level of postsecondary training.

We believe every high school should have a college access strategy for students that incorporates our recommendations. Such a strategy would address four areas: curriculum, assessment, aspirations, and hands-on assistance with college entry activities. Some recommendations will include best practices for all students; for example, recommendation 2 talks about identifying assessments of college readiness and making students aware of their proficiency on these assessments, and recommendation 3 discusses building college aspirations. These recommendations are useful for students still exploring their interest in attending college as well as providing feedback to students who have already determined that they are interested in attending college. Other recommendations will be targeted at students who have decided they want to attend a two- or four-year institution after

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12. National Center for Education Statistics (2004); Nunez and Cuccaro-Alamin (1998).

high school. For example, recommendation 4 focus on assisting students in their search for identifying specific colleges, taking college entrance exams, and completing college applications. The recommendations reinforce that high schools need to be prepared to inform and support students to obtain their highest aspirations.

Although this guide does not directly address steps that college and universities can take to promote access, it does highlight the important role these institutions should play and may be of benefit to higher education administrators. Much of the evidence in the practice guide is based on programs that were implemented by or in partnership with postsecondary institutions. That said, the panel notes that other entities influence access to college and may benefit from the recommendations in this guide as well. For example, parents and families have an essential role to play in helping their children prepare for college. Elementary and middle schools also can help set students on the path to college. In addition, community organizations often play a critical role in providing the academic or social supports to assist students in preparing for college. Finally, states and the federal government impact college access through financial aid policies. Although the guide does not target these stakeholders, they may find the recommendations relevant.

Although the guide addresses ways to improve students' and parents' knowledge of financial aid (see recommendation 5), it does not include recommendations on how to provide financial assistance to students. The panel focused on steps that high schools and districts could take to improve college access, and federal and state financial aid policy is beyond the scope of the guide.

Throughout the guide, the panel uses the term *college* to refer broadly to all types of two- and four-year institutions. When necessary, the terms *two-year college* and *four-year college* are used to distinguish between these two types of institutions.

Status of the research

Overall, the panel believes that the existing research on college access services and programs is not at a level to provide conclusive evidence of best practices. Studies of promoting college access generally look at specific programs that provide a bundle of services, and not at individual services, making it difficult to isolate a specific service's contribution to college readiness and enrollment. In addition, the panel encountered varying impacts across college access programs with ostensibly similar services. The reasons for the varying impacts are difficult to determine. In some cases, the programs are serving different populations of students. For example, some may target students who already have some interest in attending college, whereas others may focus on students who are unlikely to attend college due to difficulty with achievement, attendance, or behavior in high school. In addition, college access programs have been studied and tested in the real world, where a range of college access services is provided. Thus, research on college access programs is generally designed to ask whether a particular college access program is more effective than other services being provided. It is not designed to ask whether college access services are effective compared to offering no services at all.

In offering these recommendations, the panel is confident that it is important to offer college access services to ensure that all students who want to attend college are prepared to do so. The guide includes the set of recommendations that we believe are a priority to implement. However, the nature of the research is such that we do not have a strong evidence base for recommending specific practices over others; thus, the recommendations are all supported by low or

moderate levels of evidence as described in the introduction.

Summary of the recommendations

This practice guide includes five recommendations for how high schools and school districts can improve access to higher education. The first two recommendations focus on preparing students academically for college by offering a college preparatory curriculum and assessing whether students are building the knowledge and skills needed for college. These two recommendations reflect the panel's belief that students are best served when schools develop a *culture of achievement* and a *culture of evidence.* The next recommendation describes how high schools can build and sustain college aspirations by surrounding students with adults and peers who support these aspirations. Recommendations 4 and 5 explain how high schools can assist students in completing the critical steps to college entry, including college entrance exams and college and financial aid applications.

Recommendation 1 advises schools and districts to ensure that every student has the ability to be ready to take college-level courses by beginning preparation in the 9th grade. Students and their families need to understand what the requirements are for college, and what is needed to apply to certain postsecondary institutions. In particular, the panel recommends that students complete Algebra I by the end of 9th grade, and by graduation, complete coursework in core academic and elective areas that make them minimally proficient to attend community colleges without the need for remediation. Such actions can strengthen the culture of achievement within a school.

If schools and districts are to monitor student progress toward being academically prepared for college, then they need to have adequate assessment measures in place for all students at every grade level. Recommendation 2 promotes a culture of evidence by encouraging schools and districts to use assessments that determine whether students are on track academically for college and points out the importance of early warning systems for students who are deficient in particular courses. The panel emphasizes here that assessment without action is virtually meaningless. Once deficiencies have been found, students and their families need to understand them, and they need to be assisted in overcoming them.

Recommendation 3 describes how high schools can help students build college-going networks by linking students to college-educated mentors, encouraging students to form academically oriented peer groups, and allowing students to explore a variety of careers. These activities can build a college-going identity and support students' aspirations.

Recommendations 4 and 5 address steps schools can take to assist students in completing the discrete tasks for college entry. The panel considers it imperative that thinking about applying to college and how to pay for college need to begin before the 12th grade. Financial literacy about college affordability is an example of an activity that could occur as early as 9th grade. At the same time, some activities are specific to the senior year. This guide offers recommendations for the actions that will enhance the ability of students to complete the college application process successfully.

The panel appreciates that schools and districts may face challenges and road-blocks in implementing all of the recommendations. Many of these recommendations could require additional staff or other resources that are not easily accessible to schools. Implementing these strategies may require changing mind-sets and promoting new behaviors, which may not happen

immediately. Schools also have different personnel responsible for different activities, and the panel has avoided specifying one individual who must undertake a particular activity and instead has focused on key actions that schools need to take to improve college access. To address these concerns, each recommendation includes a series of roadblocks and suggested approaches that offer innovative solutions to some issues that schools may encounter when implementing the recommendations.

The panel believes that the greatest success in increasing student access to college will be achieved by a coordinated effort in implementing these recommendations. The suggested practices need to be developed systematically, monitored, evaluated, and modified, if necessary. The guide is not meant as a resource that school principals can use to implement an individual recommendation and be successful. Although an individual recommendation may succeed in improving college-going rates, the panel discourages schools and districts from employing a piecemeal approach. Students will be best served by a strategic plan for implementing all five recommendations in their schools.

Checklist for carrying out the recommendations

Recommendation 1. Offer courses and curricula that prepare students for college-level work, and ensure that students understand what constitutes a college-ready curriculum by 9th grade

☐ Implement a curriculum that prepares all students for college and includes opportunities for college-level work for advanced students.

☐ Ensure that students understand what constitutes a college-ready curriculum.

☐ Develop a four-year course trajectory with each 9th grader that leads to fulfilling a college-ready curriculum.

Recommendation 2. Utilize assessment measures throughout high school so that students are aware of how prepared they are for college, and assist them in overcoming deficiencies as they are identified

☐ Identify existing assessments, standards, and data available to provide an estimate of college readiness.

☐ Utilize performance data to identify and inform students about their academic proficiency and college readiness.

☐ Create an individualized plan for students who are not on track.

Recommendation 3. Surround students with adults and peers who build and support their college-going aspirations

☐ Provide mentoring for students by recent high school graduates who enrolled in college or other college-educated adults.

☐ Facilitate student relationships with peers who plan to attend college through a structured program of extracurricular activities.

☐ Provide hands-on opportunities for students to explore different careers, and assist them in aligning postsecondary plans with their career aspirations.

Recommendation 4. Engage and assist students in completing critical steps for college entry

☐ Ensure students prepare for, and take, the appropriate college entrance or admissions exam early.

☐ Assist students in their college search.

☐ Coordinate college visits.

☐ Assist students in completing college applications.

Recommendation 5. Increase families' financial awareness, and help students apply for financial aid

☐ Organize workshops for parents and students to inform them prior to 12th grade about college affordability, scholarship and aid sources, and financial aid processes.

☐ Help students and parents complete financial aid forms prior to eligibility deadlines.

Recommendation 1. Offer courses and curricula that prepare students for college-level work, and ensure that students understand what constitutes a college-ready curriculum by 9th grade

The courses students take in high school have important consequences for their academic preparation and their ability to access college.[13] Yet, low-income and first-generation students are less likely than other students to complete a rigorous high school curriculum that prepares them for college, either because it is not offered by their high school or they are not encouraged to enroll in it.[14] It is critical that high schools enable students to enroll in courses that will prepare them academically for college-level work. This process has two steps: *offering* the relevant courses and *advising* students to take them.

High schools should offer, as a default, a college-*ready* curriculum that includes specific courses in key subjects. The panel defines a college-ready curriculum as one that, when completed, will enable students to enroll in college without need for remediation. In addition, all schools should offer Advanced Placement (AP) or other college-*level* opportunities. By 9th grade, students need to understand the courses that comprise this curricular track and their importance for accessing college. A four-year course trajectory can then help students plan and complete the coursework needed to prepare for college.

Level of evidence: Low

The panel judged the level of evidence for this recommendation to be *low*. None of the studies examining the impact of offering a college-ready curriculum met WWC standards. The lack of evidence partly reflects the challenge of rigorously evaluating the impact of high school course taking—students who choose to enroll in rigorous courses can differ in important ways from students who do not.

The evidence for taking a college-ready curriculum consists of six studies that potentially met standards.[15] Two of the studies provide mixed evidence on the effect of a rigorous high school curriculum,[16] and four studies show positive effects of AP courses.[17] The evidence for academic advising is stronger, with six relevant programs that had studies meeting standards, but the impact of academic advising could not be isolated from other program components.[18] Despite the limited evidence for this recommendation, the panel believes that offering the courses needed to prepare for college and informing students about those courses are critical steps for improving college access.

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13. Adelman (1999, 2006).

14. Adelman (1999); Alexander (2002); Martinez and Klopott (2003); Wimberly and Noeth (2005).

15. Allensworth et al. (2008); Attewell and Domina (2008); Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008).

16. Allensworth et al. (2008); Attewell and Domina (2008).

17. Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008).

18. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Middle College High School—Dynarski et al. (1998); Sponsor-a-Scholar—Johnson (1998); Upward Bound—Myers et al. (2004); Quantum Opportunity Program (QOP)—Schirm, Stuart, and McKie (2006).

Brief summary of evidence to support the recommendation

Two studies that potentially meet standards examined the effect of high school course taking.[19] One study found that taking a more intense curriculum in high school has positive effects on high school performance and the likelihood of entering and completing college.[20] Curricular intensity is based on the number of credits in core subject areas, the highest math course taken, the number of AP courses completed, and enrollment in remedial math or English. However, a study of a school district that ended remedial classes and required college prep coursework for all students found no effect on high school dropout rates or the likelihood of entering college.[21]

The panel identified four studies that potentially meet standards that examine the effect of AP course taking.[22] These studies report positive effects of enrolling in an AP course or taking the AP course and exam on high school completion, college entry, and college degree completion.

Five correlational studies provide additional evidence on the relationship between course taking and achievement.[23] Two of these studies found a positive correlation between a rigorous high school curriculum and completion of a college degree,[24] and three studies reported a positive effect on high school achievement.[25]

However, a positive correlation does not mean that the coursework caused higher achievement.

Six programs with studies meeting standards provide evidence on academic advising.[26] Most of these programs offered individual assistance to students in selecting the classes needed to prepare for college. Sponsor-a-Scholar also worked with school staff to ensure that students enrolled in a college preparatory curriculum, and EXCEL made completion of a college preparatory curriculum a requirement for receiving a scholarship. Two of these programs[27] had a positive impact on college enrollment, whereas the other four programs[28] had no impact.

How to carry out this recommendation

1. Implement a curriculum that prepares all students for college and includes opportunities for college-level work for advanced students.

The panel recommends that high schools and districts offer the courses and curricula needed to prepare students for college. This includes providing courses that are required for entry into a two- or four-year college and providing rigorous academic coursework that prepares students for the demands of college. Table 3 presents examples of college preparatory course requirements. Although there are slight differences in the requirements, all include four years of English, at least three years of mathematics, two to three years of science and social studies, and one to two years of a foreign

19. Allensworth et al. (2008); Attewell and Domina (2008).

20. Attewell and Domina (2008).

21. Allensworth et al. (2008).

22. Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008).

23. Adelman (1999, 2006); Gamoran and Hannigan (2000); Lee and Ready (2009); Lee, Croninger, and Smith (1997).

24. Adelman (1999, 2006).

25. Gamoran and Hannigan (2000); Lee and Ready (2009); Lee, Croninger, and Smith (1997).

26. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Middle College High School—Dynarski et al. (1998); Sponsor-a-Scholar—Johnson (1998); Upward Bound—Myers et al. (2004); QOP—Schirm, Stuart, and McKie (2006).

27. Talent Search and Sponsor-a-Scholar.

28. EXCEL, Middle College High School, QOP, and Upward Bound.

Table 3. Examples of college preparatory course requirements

Program/ Requirements	English	Mathematics	Science	Social Studies	Additional Courses
High Schools That Work	Four years	Four years: Algebra I, geometry, Algebra II, and a fourth higher-level mathematics course	At least three years: biology, chemistry, physics or applied physics, or anatomy/physiology	Three or more years	At least one computer course
State Scholars Initiative (SSI)	Four years	Three years: Algebra I, Algebra II, and geometry	Three years: biology, chemistry, and physics	Three and a half years: U.S. and world history, geography, economics, and government	Two years of a language other than English
California's A–G Requirements	Four years	Three years: Elementary and advanced algebra and geometry	Two years: biology, chemistry, physics, or physical science	Two years: world history, cultures, and geography; U.S. history	Two years of a language other than English; one year of visual and performing arts; one year of college preparatory elective
Indiana "Core 40" Curriculum	Four years	Three years: Algebra I, Algebra II, and geometry	Three years: biology, chemistry or physics, and one additional course	Three years: U.S. history, U.S. government, economics, world history or geography	Three years of world language, fine arts, and/or physical education
Academic Competitiveness Grant Requirements	Four years	Three years: including Algebra I and a higher-level class	Three years: biology, chemistry, and physics	Three years	One year of a language other than English
KnowHow2Go[a]	Four years	Three or more years: including Algebra I and a higher-level class	Three or more years	Three or more years	Possibly foreign language, arts, computer science

a. *Source:* www.knowhow2go.org

language. These requirements also specify that students should take algebra and other higher-level mathematics courses during high school. The panel recommends that at a minimum, all students should pass Algebra I by the end of their 9th-grade year. Currently, 21 states and the District of Columbia have implemented a college-ready curriculum for all students as a graduation requirement;[29] districts in other states could consider making a college-ready track the default curriculum.

The panel recommends that schools enhance their college-ready curriculum with opportunities for prepared students to take college or college-level courses. This includes dual enrollment arrangements that allow students to take college courses for high school and college credit; AP courses; and the International Baccalaureate (IB) program, which also can prepare students for the academic demands of college and facilitate some students' admission to more selective schools.[30] A variety of resources are available to help schools implement these types of programs, including state and federal AP incentive programs or e-learning options

29. Achieve, Inc. (2009).

30. Dougherty, Mellor, and Jian (2006); McCauley (2007); Perkins et al. (2004).

and partnerships with postsecondary institutions to offer dual enrollment to qualified students.[31]

2. Ensure that students understand what constitutes a college-ready curriculum.

There is substantial evidence that students do not understand the curricular requirements for college entry and success, even those for community colleges.[32] High schools should clearly communicate with students and families to ensure that they understand the courses needed for college (and that students are on track to complete them, as discussed further in recommendation 2), *before they enter high school*. For example, students should know that in many states, they need to take the following types of classes beginning in 9th grade:

- Geometry, algebra, trigonometry, advanced math

- American history, world history, civics

- Earth/physical science, biology, chemistry, physics

This communication can come in the form of a mailing (see Exhibit 1)[33] or in general advice provided by school or college access program staff by the end of 8th grade.[34] In later years, students still need one-on-one attention—from a counselor, a teacher, an administrator, or program staff—to facilitate and encourage rigorous course taking.[35] A high school might

schedule drop-in hours for students to receive academic advising and assistance with selecting courses from a teacher, counselor, or other staff person.[36]

Schools and districts also should provide continuing professional development or counseling for counselors, registrars, teachers, and other staff on college prep course requirements, so that they can serve as an informative resource for students.[37]

3. Develop a four-year course trajectory with each 9th grader that leads to fulfilling a college-ready curriculum.

Beginning in 9th grade, high school counselors should work individually with each student to ensure that he or she has a plan to complete the courses during high school. This could be structured as an individualized education, learning, or graduation plan that guides a student's curricular choices throughout high school (see Exhibit 2).[38] Even though several states require that schools develop a plan that defines the courses a student will take in high school,[39] high schools should make sure that these plans are living documents that are referred to by teachers and counselors and provided to parents.

Providing students with information about the courses that are needed to prepare for college is only the first step. High schools need to ensure that students take the college-ready curriculum throughout high school. The panel recommends that high schools first develop a general four-year

31. Hargrove, Godin, and Dodd (2008); Jackson (2009); Jeong (2009); Karp et al. (2007); Keng and Dodd (2008); Klopfenstein and Thomas (2009); Quint, Thompson, and Bald (2008); Siskin and Weinstein (2008).

32. Perna et al. (2008); Plank and Jordan (2001).

33. Dounay (2008).

34. Constantine et al. (2006); Maxfield et al. (2003); Quigley (2003).

35. Bergin, Cooks, and Bergin (2007); Gandara (2002, 2004); Gandara et al. (1998); Johnson (1998).
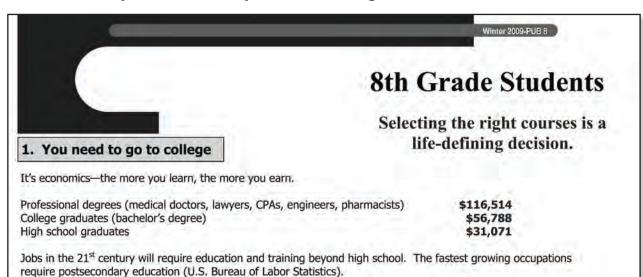
36. Calahan et al. (2004).

37. Austin Independent School District, Office of Program Evaluation (2002); Perna et al. (2008).

38. Christie and Zinth (2008); Robinson, Stempel, and McCree (2005).

39. Education Commission of the States. *Additional High School Graduation Requirements and Options* (http://mb2.ecs.org/reports/Report.aspx?id=740, accessed June 2, 2009).

Exhibit 1. Example of course requirement mailing

Winter 2009-PUB 8

8th Grade Students

Selecting the right courses is a life-defining decision.

1. You need to go to college

It's economics—the more you learn, the more you earn.

Professional degrees (medical doctors, lawyers, CPAs, engineers, pharmacists)   **$116,514**
College graduates (bachelor's degree)   **$56,788**
High school graduates   **$31,071**

Jobs in the 21st century will require education and training beyond high school. The fastest growing occupations require postsecondary education (U.S. Bureau of Labor Statistics).

2. You must take the right courses

SD CollegePrep Model Program of Study				
Grade	Math	English	Social Science	Laboratory Science
8	Algebra I	English		
9	Geometry	English	American History	Physical or Earth Science
10	Algebra II	English	World History	Biology
11	Trigonometry	English	American Government	Chemistry
12	Advanced Senior Math	English	Economics, Geography, Psychology, etc.	Physics

† The sequence of these courses may vary from school to school.

3. You can afford it

The average cost for a full-time student in South Dakota's public universities:

Tuition and fees $6,327
Room and board on campus   <u>$4,766</u>
           Total $11,093

Many South Dakota students can get financial aid, federal grants and/or loans to meet the costs of their education, in addition to numerous scholarships and awards available at every postsecondary educational institution in the state.

A public university freshman with maximum need for financial assistance can receive as much as:

$ 4,731	Federal Pell Grant
$ 1,000	Federal supplemental opportunity grant (highest public university)
$ 3,000	Federal Perkins Loan (highest public university)
$ 3,500	Federal Stafford Loan (maximum allowed)
$ 2,000	Unsubsidized Federal Stafford Loan
<u>$ 2,100</u>	Work Study (university average)
$16,331	Total funding available from federal sources

Awards could vary based on the student's financial need, availability of Federal Student Aid funds, and university financial aid awarding policies.

Planning the road to college must start early. The earlier you start, the better prepared you will be to go to college.

- Take the right courses, including four years of math in high school. Start by completing algebra in the 8th grade if you can.
- Set up a good study area.
- Get organized for school.
- Consider goals for college and life.
- Look at possible careers and determine what type of college to attend and what classes to take.
- Get involved in extracurricular activities while in high school.
- Talk with college students and graduates about college.
- Discuss your college goals with your school counselor.
- Start saving for college now.
- Start investigating scholarships and financial aid options.

See www.sdcollegeprep.info for more information.

www.sdcollegeprep.info   ●   **info@sdcollegeprep.com**

The Board of Regents published 11,000 copies of this flyer at a cost of $ .13 per copy. SDBOR is an equal employment opportunity employer.

Source: South Dakota Board of Regents website, www.sdbor.edu.

Exhibit 2: Example of a personalized learning plan

NAME_____ Student ID #_____

Meeting Dates: Grade: 9 _____ 10 _____ 11_____ 12_____

GRADUATION REQUIREMENTS: **220 Credits**

English **4 years** (40 credits)

	1st Sem Grade		2nd Sem Grade
English I		English I	
English 2		English 2	
English 3		English 3	
English 4		English 4	

Social Studies **3 Years** (30 Credits)

	1st Sem Grade		2nd Sem Grade
WH		WH	
US Hist		US Hist	
US Gov't/ Econ		Econ/US Gov't	

Mathematics **2 Years** (20 credits) –
Must include HS Algebra

	1st Sem Grade		2nd Sem Grade
Algebra _____		Algebra _____	
Math _____		Math _____	

Science **2 Years** (20 Credits) –
Physical **and** Life/Biological

	1st Sem Grade		2nd Sem Grade
Phy Sci		Phy Sci	
Life		Life	

Physical Education **2 Years** (20 Credits)

	1st Sem Grade		2nd Sem Grade
PE 9/Sport		PE 9/Sport	
PE/Sport		PE/Sport	

Fine Arts **OR** Foreign Language **1 Year** (10 Credits)

	1st Sem Grade		2nd Sem Grade
FA/FL		FA/FL	

Health (5 Credits) and
College & Career Planning (5 Credits)

Health		CCP	

Electives (75 Credits)

	1st Sem Grade		2nd Sem Grade		1st Sem Grade		2nd Sem Grade

Additional Graduation Requirement:

CAHSEE Passed: ELA _____Math_____

> **Remember that High School Graduation Requirements are not the same as the College Admission Requirements (A–G). Know the difference!** Visit the school website for detailed college admissions information.

HIGH SCHOOL CEEB CODE xxxxxx

> **A–G Requirements (NO "D" grades Accepted)**
> CALIFORNIA STATE UNIVERSITY (CSU) www.csumentor.edu
> UNIVERSITY OF CALIFORNIA (UC) www.ucop.edu/pathways

Subject Area	Years Required
A. Social Science	Two years. One year US History or ½ year US History and ½ year of US Government, and one year of World History.
B. English	Four years of college-preparatory English composition and literature.
C. Mathematics Algebra 1 Algebra 2/Trigonometry Geometry Advanced Math	Three years required. Four years recommended.
D. Laboratory Science	Two years required. Three years recommended. (Two of the following: Biology, Chemistry, Physics, or other approved college preparatory science.)
E. Language other than English	Two years required. Three years recommended—at least two years of the same language.
F. Visual Performing Arts	One year is required.
G. College Preparatory Elective	One year in most of the above A–F areas, or approved elective.
NCAA (www.ncaaclearinghouse.org) 16 Core Courses beginning with the class of 2008	

Career Goal:_____

_____

Plans after High School:

_____

_____

Student Signature _____

Parent Signature _____

(continued)

Exhibit 2: Example of a personalized learning plan *(continued)*

"Four-Year Plan" Worksheet

Student Name_____   Date_____

Career Goal (check one)   ❑Four–Year University   ❑Community College (Transfer Program)
                                  ❑Trade/Tech/Art School   ❑Other

GRADE 9 (Student must take 6 classes—60 credits total for year)		GRADE 10 (Student must take 6 classes—60 credits total for year)	
Fall Semester	**Spring Semester**	**Fall Semester**	**Spring Semester**
English I	English I	English II	English II
Math	Math	Math	Math
Science	Science	Science	Science
PE	PE	World History	World History
Reading or Elective	Health	PE	PE
Elective	Elective	Elective	Elective
Elective (Optional)	Elective (Optional)	Elective (Optional)	Elective (Optional)
GRADE 11 (Student must take 5 classes—50 credits total for year)		**GRADE 12 (Student must take 5 classes—50 credits total for year)**	
Fall Semester	**Spring Semester**	**Fall Semester**	**Spring Semester**
English III	English III	English IV	English IV
U.S. History	U.S. History	American Gov't	Economics
Elective	Elective	Elective	Elective
Elective	Elective	Elective	Elective
Elective	Elective	Elective	Elective
Elective (optional)	Elective (optional)	Elective (optional)	Elective (optional)
Elective (optional)	Elective (optional)	Elective (optional)	Elective (optional)

Four-Year University Bound Student
(Example) Meeting UC / CSU A–G Course Sequence

Career Goal (check one)   ❑Four–Year University   ❑Community College (Transfer Program)

GRADE 9 (Student must take 6 classes—60 credits total for year)		GRADE 10 (Student must take 6 classes—60 credits total for year)	
Fall Semester	**Spring Semester**	**Fall Semester**	**Spring Semester**
English I or English I Acc	English I or English I Acc	English II or English II Acc	English II or English II Acc
Algebra I or higher math	Algebra I or higher math	Geometry or higher math	Geometry or higher math
Biology	Biology	Chemistry or Conceptual Physics	Chemistry or Conceptual Physics
Health	College Career Planning	World History or AP European	World History or AP European
PE Activities 9 or Sport	PE Activities 9 or Sport	PE or Sport	PE or Sport
World Language 1	World Language 1	World Language II	World Language II
Elective (Optional)	Elective (Optional)	Elective (Optional)	Elective (Optional)
GRADE 11 (Student must take 5 classes—50 credits total for year)		**GRADE 12 (Student must take 5 classes—50 credits total for year)**	
Fall Semester	**Spring Semester**	**Fall Semester**	**Spring Semester**
English III or AP Language	English III or AP Language	English IV or AP Literature	English IV or AP Literature
U.S. History or AP US History	U.S. History or AP US History	American Gov't or AP Gov't	Economics or AP Economics
Algebra II/Trig or higher math	Algebra II/trig or higher math	*Advanced college prep math*	*Advanced college prep math*
Advanced College Prep Science	*Advanced College Prep Science*	Visual Performing Art	Visual Performing Art
World Language III	*World Language III*	Elective	Elective
Elective (optional)	Elective (optional)	Elective (optional)	Elective (optional)

Source: Adapted from materials created by a National College Advising Corps program site.

course trajectory that defines the potential timing and sequence of college-ready classes for students. This may include options for the core courses students should take each year in order to prepare for college. This approach offers a curriculum path that students can use to inform their specific selection of classes each year of high school.

Potential roadblocks and solutions

Roadblock 1.1. *Teachers may not be trained to teach advanced courses.*

Suggested Approach. Not all teachers must be trained to teach advanced courses, but teachers should have access to professional development opportunities that help them sharpen their skills so that the curriculum they teach is as rigorous and engaging as possible. Helping teachers understand how their classes fit with a college preparatory sequence begins with asking them to participate in the planning of the articulation of the curriculum. Schools also can reach out to institutions of higher education to implement dual enrollment opportunities or have community college professors teach courses on campus.

Roadblock 1.2. *Enrolling students who are not prepared for the academic rigor in college prep or college-level classes is seen as counterproductive.*

Suggested Approach. It is critical that all students have the *option* to participate in these types of classes and are supported

in their efforts. Developing a culture of achievement among the faculty is a key strategy to supporting students in their efforts so that the teachers are interested in and willing to help students who are challenging themselves. Schools can provide academic support for students who take the most rigorous course load available by setting up peer-tutoring opportunities so that stronger students can work with those students who may be struggling in honors, AP, or IB classes. Teachers can be encouraged to set up this sort of peer system among students in their individual classes.

Roadblock 1.3. *Our high school has limited information on entering 9th-grade students to assist them in planning their high school coursework.*

Suggested Approach. High schools need academic information on incoming students to help them plan a four-year course trajectory that will prepare students for college. High schools can coordinate with middle schools to obtain transcripts, academic records, and other resources that help high school staff better understand the needs of incoming students. This information can be used to assist students in selecting appropriate high school courses and to help high schools create an appropriate four-year plan with students. High schools also can coordinate with middle schools to inform students about how their middle school performance affects the courses they will take in high school and their ability to access college.

Recommendation 2. Utilize assessment measures throughout high school so that students are aware of how prepared they are for college, and assist them in overcoming deficiencies as they are identified

Completing the courses needed to graduate from high school and meet college entry requirements does not guarantee that students have the knowledge and skills needed to succeed in college. Many high schools produce students who may pass state exit exams and meet graduation standards but still are academically unprepared for college, as evidenced by the nearly 60 percent of students who are required to take remedial courses as a condition of enrollment.[40] High schools must assess student progress to identify, notify, and assist students who are not adequately prepared as early as possible in their academic career.

Level of evidence: Low

The panel determined that the level of evidence supporting this recommendation is *low*. In this case, the rating is not necessarily a result of limited or poor research: the ability to implement related data and assessment systems is a fairly recent development. Advances in both capabilities and resources devoted to state longitudinal datasets have been promising, but these data do not yet exist for many jurisdictions. As they become more prevalent,

the panel expects that research on their use also will expand.

Although four programs with studies meeting standards included practices related to data use and additional instruction to assist students, these practices were neither isolated in the evaluation nor necessarily a major component of the program.[41] Studies of two additional programs[42] that potentially meet standards suggest that the use of data to identify and notify students of their academic progress during high school had an impact on college outcomes. There is also suggestive evidence that district- or statewide use of assessments associated with college readiness (such as PLAN and ACT[43]) is associated with improved college outcomes, but this correlation does not mean that requiring students to take those tests caused improved access to college.[44]

Brief summary of evidence to support the recommendation

Two programs with studies that potentially met standards assess students when they are high school juniors to determine their readiness for college-level work. California's Early Assessment Program (EAP) uses assessment results to inform students about whether they need additional preparation to become college ready and includes supplemental programming for students who do not meet expectations.[45] The College

40. Bailey (2009).

41. Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

42. College Now—Crook (1990); California Early Assessment Program (EAP)—Howell, Kurlaender, and Grodsky (2009).

43. Although ACT was originally an acronym for American College Testing, the official name is now ACT. PLAN is the name of an assessment administered by ACT.

44. ACT (2008a, 2008b, 2009a, 2009b).

45. California State University (2005); Howell, Kurlaender, and Grodsky (2009).

Now program in New York City uses assessment data to determine whether students are eligible for dual enrollment courses or need developmental classes to prepare for college-level coursework.[46] Studies of both programs found that they reduced the need for remediation in college, and College Now increased the number of college credits that students earned.

Two additional programs with studies that potentially met standards include elements of academic support. Project GRAD analyzed data to understand and track students' progress toward meeting graduation requirements. GEAR UP sites provide individualized academic support for students with academic problems and those who do not perform well on standardized assessments.[47] Studies of both programs examined middle school outcomes and did not report high school or college outcomes.[48]

Four college access programs that provided academic assistance to improve students' academic proficiency had studies that met WWC standards.[49] Talent Search, Sponsor-a-Scholar, and the Quantum Opportunity Program (QOP) offered fairly low-intensity academic assistance through tutoring services or homework help after school. Although Talent Search and Sponsor-a-Scholar had a positive impact on college enrollment, academic services formed a minor component of all three. Upward Bound offered additional academic coursework throughout the school year and during a six-week summer session but did not have an impact on college enrollment or degree attainment.

Correlational studies that examined ACT's College Readiness System provide suggestive evidence on identifying and notifying students who are not college ready.[50] The College Readiness System includes the EXPLORE and PLAN assessments in 8th and 10th grades that are precursors to the ACT (one of two national college admissions tests) and the COMputer-adapted Placement Assessment and Support Services (COMPASS), a college placement test administered by ACT. The panel also relied on other descriptive and qualitative studies.[51]

How to carry out this recommendation

1. Identify existing assessments, standards, and data available to provide an estimate of college readiness.

Assessments can play a key role in alerting students, parents, and teachers about whether students are "on track" for college matriculation when they graduate from high school. Currently, no single college-readiness assessment is commonly available or used by schools and districts (although there is progress in that direction[52]). Recognizing the limited time and resources schools have to develop a new assessment, the panel recommends that high schools consider several existing assessments that can provide an early indication of students' academic preparation for college:

- **College or community college placement exam.** Schools and districts can use whole assessments or a subset of items from existing college or community college placement exams as a diagnostic measure. Although many placement exams are school specific,

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46. Crook (1990); Karp et al. (2007, 2008).

47. Standing et al. (2008).

48. Opuni (1999); Standing et al. (2008).

49. Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

50. ACT (2008a, 2008b, 2009a, 2009b).

51. Achieve, Inc. (2009); Austin Independent School District, Office of Program Evaluation (2002); Quint, Thompson, and Bald (2008).

52. See, for example, Achieve, Inc. (2009).

some common assessments can be adopted by a high school (e.g., COMPASS and ACCUPLACER, an assessment developed by the College Board and used to help determine course selection for students).

- **College admissions exams.** High schools can have students take one of the college admissions exams designed for students in early high school grades (e.g., PSAT, EXPLORE, PLAN).[53] These assessments can gauge early academic preparation in math and reading as well as reasoning and critical thinking. Later in high school, states can have all students take the college admission exams (e.g., SAT, ACT) to gauge their college readiness.

- **Statewide college and career readiness assessments.** Schools in states that already conduct a college or career assessment should take advantage of these assessments and use them as an indicator of college preparedness.[54]

- **Local assessments.** In districts, schools can use existing benchmark assessments on a regular basis to measure students' progress against standards tied to academic proficiency.[55]

In some cases, schools may be able to obtain financial support for implementing one of these assessments.[56]

The information gathered from these assessments should be combined with other indicators of academic progress to determine if students are on track for college as defined by coursework progression and academic proficiency. High schools can connect assessments in each of these areas into a cohesive set of information that can be used in guidance and planning. High schools can assess coursework progression against the college preparatory tracks described in recommendation 1. Academic proficiency information is contained in existing state assessments, and postsecondary aspirations can be assessed in a brief student survey.

To gauge whether they are successfully preparing students for college, high schools should gather information on postsecondary enrollment for past students. In some states, high schools can gather this information from a state database that tracks students from kindergarten through college. In other states, high schools and districts can track their graduates through the National Student Clearinghouse (http://www.studentclearinghouse.org), a comprehensive student-level repository of data from 3,300 postsecondary institutions attended by 92 percent of college students in the United States. Alternatively, high schools may be able to partner with local and regional postsecondary institutions to gather information on the enrollment of their graduates. The panel recommends that high schools use these data to understand the enrollment rate, persistence, and degree attainment of graduates in order to better understand the impact of current practices.

53. Achieve, Inc. (2009); Dounay (2006); Howell, Kurlaender, and Grodsky (2009). For example, Buffalo, New York, administers the PSAT to first-year high school students; Chicago, Illinois, uses the ACT's EPAS system, administering EXPLORE to its 8th and 9th graders and PLAN to its 10th and 11th graders.

54. Ten states administer college and career-readiness assessments to all students: four are state specific, as is the Early Assessment Program, and can replace placement tests; one administers the SAT; and five administer the ACT statewide (Achieve, Inc., 2009).

55. Quint, Thompson, and Bald (2008). For example, school districts in Richmond, Virginia, and Fresno, California, use benchmark assessments every nine weeks to measure students' progress against standards tied to academic proficiency.

56. For example, Florida and South Carolina provide funding to districts that want to administer the PSAT or PLAN assessment to their students.

2. Utilize performance data to identify and inform students about their academic proficiency and college readiness.

The information schools collect on academic performance and college readiness (step 1) should be used to identify students who are falling behind and to inform all students of their progress in becoming college ready. This applies to both the courses students need to be qualified for college entry and the skills they acquire in those courses to avoid remediation once they matriculate. The use of performance data should occur as early as 9th grade to ensure that students can take the necessary steps to get back on track. The panel recommends using the data in the following ways:

- **Identify students with college expectations who are performing below grade level and who are not on a college-ready track.** Schools should identify students who are not meeting grade-level standards and who are not on track for college but have college aspirations. Although state assessments can be used to identify students performing below grade level, course grades, grade point average (GPA), course completion, and college-readiness assessments can be used to identify students who are not on track for college. For example, a school can flag students who are performing below a certain GPA, or students who have not completed courses on the college preparatory track. High schools should obtain and use middle school transcripts of their incoming students to support course placement and flag entering 9th graders with academic deficiencies before those students step foot on campus.[57]

- **Inform all students about their performance and its implications for accessing college.** Discussions with students should be held at least annually

about the progress they are making and the hurdles they need to overcome in becoming college ready.[58] Students and families should receive the results of the data collected by the school, possibly in the form of a data report or a letter. For example, a data report might include information on course grades, college-readiness assessment results, and high school course completion.[59] Students identified as below grade level or not on track for college should have an individual meeting with someone at the school to discuss the results and their implications for accessing college. Students who are not making progress toward completing graduation or college preparatory requirements should be notified of possible interventions that can help them get back on track (e.g., summer school, remediation programs).[60]

3. Create an individualized plan for students who are not on track.

Students who are not on track to complete a typical academic course sequence often have trouble catching up and meeting college-readiness objectives.[61] The earlier in high school a student can catch up to a standard course sequence, the greater the likelihood of meeting college entrance requirements at the time of high school graduation.

High schools should work with students who are not on track to develop a plan that will assist them in "catching up."[62] The plan should specify the steps students will take to get back on track academically and the additional instruction they will receive to support their academic proficiency. High schools, colleges, and a variety of

57. Gewertz (2009).

58. Dounay (2006).

59. Gewertz (2009).

60. Christie and Zinth (2008).

61. Wimberly and Noeth (2005).

62. Quint, Thompson, and Bald (2008); Robinson, Stempel, and McCree (2005).

student academic support programs provide a range of options for students who are behind but eager to make progress. Teachers, counselors, and college advisors can play a pivotal role in helping students make the best choices for supplemental instruction and in connecting students back into more typical instructional programs at the appropriate time. The panel encourages high schools to choose these programs carefully, paying particular attention to the "fit" between a particular student's demonstrated need and the program's intent. "Reteaching" a student with similar instructional strategies, in similar instructional settings, may not be as useful as a more customized approach to matching deficiencies with deliberate progress objectives.

Specifically, high schools and districts can collaborate with postsecondary institutions or existing college access programs to offer additional instruction during out-of-class time. One example is tutoring and homework assistance by college students, program staff, or teachers, and in a variety of formats: both in small groups and one-on-one.[63] More formally, schools can implement "recovery" programs for math courses, in which students who fail a unit are immediately required to attend after-school instruction for that unit and as an incentive for attendance may be given the opportunity to improve their grade for that unit.[64] Another option is summer programs for academic enrichment or remedial skills when necessary.[65]

An alternate strategy is additional or restructured courses to address academic deficiencies during school time. Schools can use double blocking to enable first-year students needing extra help to take "catch-up" classes for two periods each day during the first semester and then the regular academic or college prep classes in the second semester.[66]

Tutorials should be provided whenever possible to accommodate all students—on Saturdays, before school, after school, or during lunch. One potentially effective approach is to develop and publicize a matrix that shows when tutorials are available and who will be providing them. In this way, students needing additional help need not be limited to working with the teacher in whose class they are struggling.[67]

Potential roadblocks and solutions

Roadblock 2.1. *Obtaining new data on students can be expensive, schools do not have the capacity or resources to generate student-level reports, and students already take enough tests.*

Suggested Approach. It is certainly true that few schools have the capacity to implement this recommendation at the building level, but it is feasible for many districts. Consider replacing any district-level assessment that does not measure college readiness with one that does, such as the PSAT or equivalent. Alternatively, examine how well the district-level assessment already correlates with college going and success. The panel recommends taking advantage of all of the reports and/or data systems that are generated and maintained by the state.

Roadblock 2.2. *Some school staff—teachers and/or counselors—do not have the time or the training to collect or analyze data and may even view the use of data as destructive (a mechanism for criticism)*

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63. Austin Independent School District, Office of Program Evaluation (2002); Calahan et al. (2004); Johnson (1998); Maxfield et al. (2003).

64. Robinson, Stempel, and McCree (2005).

65. Austin Independent School District, Office of Program Evaluation (2002); Kallison and Stader (2008); Snipes et al. (2006).

66. Kemple, Herlihy, and Smith (2005); Quint, Thompson, and Bald (2008).

67. Robinson, Stempel, and McCree (2005).

rather than as constructive (a strategy for school improvement).

Suggested Approach. The panel recommends providing technical assistance to staff in interpreting and acting on findings from student assessments. Make sure staff are aware of the data that are currently available, make them available in their classrooms or offices when possible, and model their effective use. When feasible, consider implementing common planning time or creating a "school improvement data team" so that staff can share knowledge and ideas.

Recommendation 3. Surround students with adults and peers who build and support their college-going aspirations

Although 79 percent of students express college aspirations early in high school,[68] college plans can falter if students do not take the necessary steps to prepare for and enter college.[69] By 12th grade, low-income and first-generation students are less likely than other students to expect to earn a bachelor's degree or higher.[70] High schools should build and support students' aspirations by developing social networks that encourage college attendance and assist students in preparing for college. College students and college-educated adults can serve as mentors for students, providing guidance and support throughout the college preparation process. Extracurricular activities and college access programs can encourage the formation of college-going peer groups that share an interest in pursuing college. High schools can use career exploration activities to develop students' career interests and link those interests to postsecondary plans.

Level of evidence: Low

The panel defined the level of evidence for this recommendation as *low* because of limited evidence that the recommended practices improve college enrollment rates.

Although the panel identified evidence that supports mentoring—the first step of this recommendation—there is limited evidence on the other two steps. Six programs with studies meeting or potentially meeting standards are aligned with one or more steps in this recommendation.[71] Three of these programs had a positive impact on college enrollment,[72] and three did not impact enrollment.[73] However, isolating the impact of the recommended practices is difficult because these programs included a variety of other strategies. A few correlational studies reported a relationship between having friends with college plans and college enrollment, but they do not provide evidence on the causal effect of college-going peers.[74] Despite the low evidence rating, the panel believes that linking students with college-going adults and peers is important for building aspirations and supporting college entry.

Brief summary of evidence to support the recommendation

The panel separately reviewed studies for each of the steps that make up this recommendation. Four programs had studies that met or potentially met standards and provided mentoring services.[75] Studies of Sponsor-a-Scholar, Career Beginnings, and Puente reported a positive impact

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68. National Center for Education Statistics (2004).

69. Gandara (2002); Kao and Tienda (1998); Roderick et al. (2008).

70. National Center for Education Statistics (2006a); Nunez and Cuccaro-Alamin (1998).

71. Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998); Puente—Gandara (2002); Career Academies—Kemple (2004); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

72. Career Beginnings—Cave and Quint (1990); Puente—Gandara (2002); Sponsor-a-Scholar—Johnson (1998).

73. Career Academies—Kemple (2004); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

74. Horn and Chen (1998); Hossler, Schmit, and Vesper (1999); Sokatch (2006).

75. Career Beginnings—Cave and Quint (1990); Puente—Gandara (2002); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006).

on college enrollment,[76] whereas a study of QOP found no impact on college enrollment.[77] Mentoring in these programs consisted of a one-on-one relationship between a college-educated adult or case manager and a high school student. Mentors were expected to meet regularly with students and, in most cases, provided assistance or guidance with the college preparation process. For example, mentors in the Sponsor-a-Scholar program monitored students' academic progress and assisted them with college applications. The mentoring relationships lasted between two to four years depending on the program.

Three programs with studies that met or potentially met standards focused on the role of peers. A study of the Puente program showed a positive impact on college enrollment,[78] a study of the Career Academies program found no impact,[79] and a study of the Advancement Via Individual Determination (AVID) program did not measure college enrollment.[80] All three programs organized students into groups that facilitated academically oriented friendships. The Career Academies program was structured as small learning communities of students who take academy classes together throughout high school. The Puente program mixed high- and low-achieving Latino students in an English class for two years, and students in AVID, a program that placed promising students in college preparatory coursework, took a year-long course together that supported their coursework and emphasized a college-going identity.

The panel identified two programs with studies meeting standards that offered career exploration activities, although neither had an impact on college enrollment.[81] The Career Academies and Upward Bound programs implemented a variety of career exploration activities, including speakers from the business community, visits to employer sites, career planning assistance, career fairs, and job shadowing.[82] The Career Academies program also organized students into learning communities that focus on a career theme and provide work-based learning experiences.

How to carry out this recommendation

1. Provide mentoring for students by recent high school graduates who enrolled in college or other college-educated adults.

The panel recommends linking students to adults who can serve as college-going role models and build students' interest in college. High schools can recruit college-educated professionals to serve as volunteer mentors by reaching out to local businesses interested in partnering with schools in the community.[83] High schools also can identify volunteer mentors by recruiting local college students—particularly graduates of the high school—or partnering with a college that has service-learning opportunities for college students willing to work with high school students.[84] Individuals who share the same background as students, such as high school alumni or professionals from the local community, may understand the types of challenges students face in reaching college.[85]

76. Career Beginnings—Cave and Quint (1990); Puente—Gandara (2002); Sponsor-a-Scholar—Johnson (1998).

77. QOP—Schirm, Stuart, and McKie (2006).

78. Puente—Gandara (2004).

79. Career Academies—Kemple (2004).

80. AVID—Watt et al. (2006).

81. Career Academies—Kemple (2004); Upward Bound—Seftor, Mamun, and Schirm (2009).

82. Career Academies—Kemple, Poglinco, and Snipes (1999); Upward Bound—Myers et al. (2004).

83. Cave and Quint (1990); Gandara (2004); Pell Institute for the Study of Opportunity in Higher Education (2006).

84. Ladd (1992).

85. Calahan et al. (2004); Gandara (2004).

Mentors can take on a variety of roles for students:

- **Serve as college-going role models.** Mentors can serve as examples of college-going adults from the community and share their experiences in preparing for college, completing a college degree, and pursuing a career.[86]

- **Assist with the college entry process.** The one-on-one relationship mentors have with students allows them to provide individualized assistance with the college application and selection process for students interested in pursuing a four-year degree.[87] This might include helping with a college application, reading an application essay, assisting with a financial aid application, or researching college options (see recommendation 5).

- **Monitor academic progress.** Mentors can monitor students' academic progress by reviewing report cards and discussing students' high school coursework.[88] Mentors can advocate for students who are struggling academically to receive tutoring or additional help.

- **Listen and advise.** A mentor can simply serve as a caring adult who listens to the student, discusses his or her issues or concerns, and offers advice as needed.[89]

To fulfill these roles, mentors need to communicate regularly with students.[90] The panel recommends that mentors communicate or meet at least monthly with first-year and sophomore students, and at least weekly with juniors and seniors who are engaged in the college application and selection processes. High schools also can schedule social events or recreational activities that bring together mentors and students.

An initial mentor training can prepare mentors for their role. Providing examples of activities for mentors and students to complete together can support the mentoring relationship. In addition, high school staff should monitor mentor relationships by checking in with students and mentors to ensure that mentoring relationships are supporting students.[91]

2. Facilitate student relationships with peers who plan to attend college through a structured program of extracurricular activities.

The panel recommends that high schools use extracurricular offerings to promote the formation of college-going peer groups. The goal of these activities is to provide students with an opportunity to develop friendships with peers who plan to attend college.

College access programs can bring a group of students together on a regular basis throughout the school year to focus on preparing for college. These programs develop college-going peer groups by providing opportunities for students to work together toward a common goal of reaching college. Activities that encourage students to interact and collaborate can encourage new relationships, and these programs can be used to promote a college-going identity. For example, a program might create visible markers of group participation, such as designating a group name and meeting space or developing a group newsletter.[92]

86. Gandara (2004).

87. Cave and Quint (1990); Johnson (1998); Ladd (1992); Pell Institute for the Study of Opportunity in Higher Education (2006).

88. Johnson (1998).

89. Calahan et al. (2004); Schirm, Stuart, and McKie (2006).

90. Johnson (1998); Schirm, Stuart, and McKie (2006).

91. Johnson (1998).

92. Gandara (2004); Guthrie and Guthrie (2002); Mehan (1996).

High schools also can develop student groups that encourage academically oriented friendships, such as a debate club or an honor society.[93] Schools can infuse these extracurricular activities with a college-going message. For example, a debate club might visit a college to meet with the college debate team, or a community service club might collaborate with a student organization from a local college.

3. Provide hands-on opportunities for students to explore different careers, and assist them in aligning postsecondary plans with their career aspirations.

The panel recommends that high schools engage students in career exploration activities that provide hands-on experiences with a career or occupation. A high school can design a sequence of career exploration activities that identify students' career interests and provide a variety of activities that inform and build on these interests.[94] For example, career or interest inventories can be used to help students identify the type of work or career that interests them. High schools can use this information to invite local professionals from these career fields to speak about their education and career paths.[95] Students can then be matched to job-shadowing opportunities that allow them to follow an adult throughout the day and experience the day-to-day work of a profession that matches their area of interest.[96] By developing relationships with local employers, high schools can link students to job-shadowing activities and help interested students obtain short-term internships.

High schools can use career interests as a starting point for discussions about students' postsecondary plans.[97] Students may have limited understanding of the level or type of education required for an occupation or career field. High schools should help students learn about the skills, knowledge, and postsecondary education needed for their area of interest and provide examples of local colleges that offer a degree in their area.[98] This information can be used to develop a long-term education plan for students that can be updated and revised over time.

Potential roadblocks and solutions

Roadblock 3.1. *Mentoring relationships between students and mentors do not last, and the availability of mentors changes over time.*

Suggested Approach. High schools can partner with local colleges that offer college students a chance to earn academic credits for volunteer work. College students who earn academic credit for their mentoring role may be more likely to maintain their relationship with students throughout the school year. Local colleges often have service-learning opportunities or campus organizations that can facilitate regular meetings with mentors.

Roadblock 3.2. *Ninth-grade students are not interested in discussing careers or their career interests.*

Suggested Approach. Students may relate to the experience and career path of high school alumni who share the same background and perspective as they do. High schools should invite alumni to speak with students about their occupations and career paths. Listening to the outlook and advice of a role model who shares their background and perspective may build students' interest in a career.

93. Gandara (2004); Mehan (1996).

94. Kemple, Poglinco, and Snipes (1999).

95. Kemple (2004); Mehan (1996).

96. Haimson and Deke (2003); Hershey et al. (1999); Kemple, Poglinco, and Snipes (1999); MacAllum et al. (2002).

97. Calahan et al. (2004); Roads to Success (2008).

98. Austin Independent School District, Office of Program Evaluation, (2002).

Roadblock 3.3. *Our school already offers many extracurricular activities and we cannot add another.*

Suggested Approach. Given limited amounts of school resources and staff time, the panel recommends that high schools think critically about the range of extracurricular activities they offer. High schools should consider the value added by each activity and consider how activities contribute to the school's college goals. A strategic plan can help schools think through the goals and expected outcomes of each activity, as well as how to efficiently allocate available resources for extracurricular activities. A high school also could require completion of certain college-going milestones, such as submission of a financial aid application, as a requirement for attending an extracurricular activity or social event.

Roadblock 3.4. *Our school has insufficient resources to offer college access programs or other activities that bring together college-going peers.*

Suggested Approach. Schools can nominate students for summer bridge programs at local colleges that allow students to interact with college-going peers, take additional academic coursework, and gain exposure to a college campus. Although these programs often target 12th-grade students who were admitted to a college, summer programs also are available for students in grades 9 through 11. These programs can help students learn about the social and cultural challenges of attending college. For example, a program might teach students about time management and study skills or provide opportunities to explore the college campus. High schools can inform students about the availability of these programs and help them understand the benefits of participating.

Recommendation 4. Engage and assist students in completing critical steps for college entry

Low-income and first-generation students often face challenges in completing the steps to college entry, such as taking college admissions tests, searching for colleges, submitting college applications, and selecting a college.[99] Students may not be aware of these steps, may lack information on how to complete them, and may not receive sufficient support and advice from those around them.[100]

High schools should engage students in the college entry process, providing hands-on assistance for each step. Students who want to attend a two- or four-year institution should receive guidance in preparing for and taking the college admissions tests and searching for a college that matches their qualifications, interests, and goals. High schools should coordinate college visits to expose students to the college environment and to help them select a college. By providing one-on-one assistance with college applications, schools can ensure that students submit applications that are complete, on time, and of sufficient quality. This recommendation is targeted at assisting students who are interested in attending a two- or four-year institution.

Level of evidence: Moderate

The panel judged the level of evidence for this recommendation to be *moderate.* Six programs with studies meeting standards with or without reservations assisted students with the college entry process.[101] Although these programs consisted of additional strategies to prepare students for college, all of them focused on helping students complete the steps to college entry. Three of the programs had a positive impact on college enrollment,[102] and three had no impact on enrollment.[103] The evidence supporting this recommendation primarily consists of programs that target low-income and first-generation students with average academic achievement. Only one program, which did not have an impact on college enrollment, targeted students at risk for dropping out of high school.[104] Since programs that assisted students with the college entry process did not consistently lead to positive impacts, the panel defined the level of evidence for this recommendation as moderate.

Brief summary of evidence to support the recommendation

Six programs with studies meeting standards provided students assistance with the college entry process.[105] Five of these

99. Cabrera and La Nasa (2000); Roderick et al. (2008).

100. Choy et al. (2000); Cunningham, Erisman, and Looney (2007); Horn and Chen (1998); Ishitani and Snider (2004); Kao and Tienda (1998); Plank and Jordan (2001); Venezia and Kirst (2005).

101. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

102. Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998).

103. EXCEL—Bergin, Cooks, and Bergin (2007); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

104. QOP—Schirm, Stuart, and McKie (2006).

105. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

programs helped students with college entrance exams by offering exam preparation classes, providing waivers for exam fees, or encouraging students to take the exams.[106] All but one of the programs offered students the opportunity to visit college campuses.[107] Although there was limited information to assess the nature of these visits, they were a common feature of these programs. Most of the programs offered hands-on assistance with the college application process. For example, Talent Search provided individual counseling and advice on the college application process and helped orient students to the college entry steps. Some Career Beginnings sites offered classes on how to complete college applications. QOP case managers and Sponsor-a-Scholar mentors assisted students with college applications, and Sponsor-a-Scholar held workshops for students on the application process.

How to carry out this recommendation

1. Ensure students prepare for, and take, the appropriate college entrance or admissions exam early.

College entrance exams, both the practice exams and actual exams, represent a potential barrier for students interested in a four-year college. However, students may not know about the exams or may not know how to prepare for them, and they may not follow through in scheduling or taking the exams. High schools should make sure that students interested in attending a four-year institution prepare for

and take the practice exams by 11th grade, and the actual exam before 12th grade. Students who wait until their senior year to take the actual exam could miss a college application deadline or not have an opportunity to retake the test.

To ensure that students take the exams at the appropriate times, the panel recommends that schools clearly communicate the timeline for the testing schedule, including registration deadlines and test dates, to all students (see Exhibit 3 for an example of an entrance exam schedule). For example, schools could communicate information about key deadlines through email or phone blasts that reach all students, in-person visits to English classes by high school staff knowledgeable about the entrance tests, or by setting up information tables at athletic events. School staff can assist students with registering for the test, remind them about the testing schedule or other deadlines, or offer assistance with fee waivers.[108] For example, teachers in homeroom classes or study periods could encourage students to register for entrance exams and discuss how to prepare for the exams, such as getting a good night's sleep and arriving to the exam early.

Schools should ensure that students are prepared for college entrance exams by offering exam preparation classes or workshops, either directly through the school or by partnering with college access programs or other organizations.[109] Exam preparation classes can be offered on Saturdays or during other non-school hours,[110] and test preparation can include providing direct tutoring, offering practice tests, or using training software for

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106. Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

107. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

108. Calahan et al. (2004); Maxfield et al. (2003).

109. Calahan et al. (2004); Cave and Quint (1990); Johnson (1998); Maxfield et al. (2003); Myers et al. (2004).

110. Cave and Quint (1990); Maxfield et al. (2003).

Exhibit 3. Example of a college entrance exam schedule

SAT Test Dates for 2008/09				
Test Date	**Test**	**Main Deadline**	**Late Fee Deadline**	**Nearby Test Locations**
October 4, 2008	SAT I & II	September 9, 2008	September 16, 2008	High Schools A & B
November 1, 2008	SAT I & II	September 26, 2008	October 10, 2008	High Schools A & C
December 6, 2008	SAT I & II	November 4, 2008	November 18, 2008	High Schools B & C
January 24, 2009	SAT I & II	December 26, 2008	January 6, 2009	High Schools A & B
March 14, 2009	SAT I	February 10, 2009	February 24, 2009	High Schools A & C
May 2, 2009	SAT I & II	March 31, 2009	April 9, 2009	High Schools B & C
June 6, 2009	SAT I & II	May 5, 2009	May 15, 2009	High Schools A & B

ACT Test Dates for 2008/09			
Test Date	**Main Deadline**	**Late Fee Deadline**	**Nearby Test Locations**
September 13, 2008	August 12, 2008	August 22, 2008	High Schools A & B
October 25, 3008	September 19, 2008	October 3, 2008	High Schools A & C
December 13, 2008	November 7, 2008	November 20, 2008	High Schools B & C
February 7, 2008	January 6, 2008	January 16, 2008	High Schools A & B
April 4, 2008	February 27, 2008	March 13, 2009	High Schools A & C
June 13, 2008	May 8, 2009	May 22, 2009	High Schools B & C

Source: Adapted from materials created by a National College Advising Corps program site.

test preparation.[111] If the school partners with another organization to provide exam prep classes, an academic coordinator can arrange the promotion, enrollment, and content of the class.[112]

2. Assist students in their college search.

Students should receive assistance in finding a postsecondary program that matches their qualifications, interests, and goals.[113] Schools should set up one-on-one meetings with students to discuss the types of schools that are a good fit for them to consider and submit applications. School staff should help students coordinate their ca-

reer interests and future plans, encouraging students to consider factors such as:

- Geography/location
- Tuition cost
- Financial aid
- School size
- Admission requirements
- Retention rates
- Demographics
- Available majors

Schools should help students understand how to gather information on colleges that will help in their search. For example, students can be given an assignment that requires them to fill in information about a college that can be obtained from the college's website. The assignment can be used as a starting point for a discussion about the type of information students should be seeking, where they can

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111. Maxfield et al. (2003).

112. Johnson (1998).

113. Constantine et al. (2006); Johnson (1998); Mehan (1996); St. John et al. (2002).

Exhibit 4. Example of a college visit schedule

Time	Activity	Description
9:00AM	Arrive at college campus	
9:30AM–10:30AM	Group information session	College admissions staff provide information about the college and a summary of the college search and application process and financial aid.
10:45AM–11:45AM	Small group tours	Small group tours led by current college students (each group includes a high school chaperone).
12:00PM–1:00PM	Lunch in college dining hall	High school students have lunch with student tour guides and college admissions staff and have an opportunity to ask additional questions.
1:00PM–2:00PM	Observe college class	Small groups of students visit college classrooms.
2:30PM	Leave college campus	

Source: Adapted from materials created by a National College Advising Corps program site.

find that information on college websites, and how to compare different colleges. Students should also be guided to books or websites, such as the U.S. Department of Education's College Navigator website (http://nces.ed.gov/collegenavigator/) or database of accredited institutions (http://ope.ed.gov/accreditation/), that can assist them in searching for colleges.[114] Students should be encouraged to apply to multiple colleges to help them find a match school,[115] or to consider applying to a backup college to which they are more confident about being admitted.

3. Coordinate college visits.

The panel recommends that high schools organize trips for students to visit college campuses. These visits can introduce students to college and the college environment, inform students about the college application and selection process, and help them consider different college options. These trips should be more than a campus tour—students should have a chance to explore campus resources, observe campus life, and interact with college students (see Exhibit 4 for an example of a college visit schedule). For example, students can shadow college students, possibly alumni from their high school, throughout their day, attending classes, eating lunch, and walking around campus together.[116]

High schools should contact the admissions office of a college to set up meetings that allow students to hear from an admissions officer, a college professor, and a panel of students. Student groups on campus that represent the background or culture of high school students, such as a Latino student group, can provide a useful perspective on college and campus life.[117] A high school can plan activities that allow students to interact with campus resources, such as visiting a science laboratory or using the college library.

114. Other useful resources include the College Board Matchmaker (http://collegesearch.collegeboard.com/search/adv_typeofschool.jsp) or the Sallie Mae College Answer (http://www.collegeanswer.com/selecting/schoolcost/isc_index.jsp). These and other college planning sites are accessible through the Pathways to College Network College Planning Resource Directory (http://www.pathwaystocollege.net/collegeplanningresources/).

115. Roderick et al. (2008).

116. Calahan et al. (2004).

117. Gandara (2004).

Students also should be encouraged to participate in college access programs or summer activities that facilitate overnight stays on a campus.[118]

4. Assist students in completing college applications.

Without assistance, students may not invest sufficient time in completing college applications or may not devote attention to key details. Schools should provide students who plan to attend a four-year college with hands-on assistance in completing their college applications. High schools should work with students to ensure that their applications are complete, submitted by deadlines, and (if applicable) of sufficient quality for acceptance. Because each student's needs and interests are unique, the panel recommends that, to the extent possible, school staff provide assistance to students one-on-one or during small workshops or classes designed to assist students with completing college applications, writing application essays, or reminding them about application deadlines.[119]

The panel suggests that schools develop mechanisms for clearly communicating timelines for application milestones that

occur over the course of the year (see Exhibit 5 for an example of a timeline).[120] Schools can provide a handout that lists the key dates that students need to consider for the application process in their junior and senior years.[121] The components of a timeline could include college entrance exams, college applications, the Free Application for Federal Student Aid (FAFSA) and state financial aid forms, admission acceptances, and financial aid and housing acceptances. The timelines can be formatted so that students can enter in dates specific to the colleges they are considering. Schools can use the timelines in one-on-one meetings with students to track student progress in meeting key deadlines. Schools should make sure that all informational materials about college applications are available in multiple languages and formats.

In providing one-on-one assistance, high schools can help students fill out an application, coach students on how to write a college application essay, and discuss college application fee waivers. Schools should encourage students who need letters of recommendation to request these letters in advance of the deadline to ensure that they can be completed on time. Since much of the communication with college admissions offices is electronic, schools should ensure that students create or designate an email account early in the application process to use in communicating with colleges.

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118. Bergin, Cooks, and Bergin (2007); Cave and Quint (1990); Myers et al. (2004).

119. Bergin, Cooks, and Bergin (2007); Calahan et al. (2004); Cave and Quint (1990); Maxfield et al. (2003); Mehan (1996); Kahne and Bailey (1999); Kuboyama (2000); Seftor, Mamun, and Schirm (2009).

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120. Mehan (1996).

121. Ibid.

Exhibit 5. Example of a college admissions timeline

April 2008
- ❑ Visit a college during spring vacation.

June 2008
- ❑ Ask teachers for letters of recommendation before summer vacation.
- ❑ Visit two colleges by the end of the month.

July 2008
- ❑ Brainstorm college essay topics.
- ❑ Visit two more colleges by the end of the month.

August 2008
- ❑ Obtain admission applications for colleges being considered.
- ❑ Write a rough draft of the college application essay.
- ❑ Search for college scholarships.

September 2008
- ❑ Complete a final draft of the college essay.
- ❑ Check in with the high school's College and Career Center on a regular basis.
- ❑ Request that high school transcripts be sent.

October 2008
- ❑ Complete college applications (or the Common Application, a general application form used by more than 150 independent colleges) by the end of the month.

November–December 2008
- ❑ Early action or early decision deadline for some colleges.
- ❑ Continue to search and apply for scholarships.

January 2009
- ❑ Application deadline for most colleges and universities (January 1 or 15).
- ❑ Contact colleges to make sure your application materials were received.
- ❑ Fill out the FAFSA (released January 1).

February 2009
- ❑ Complete the FAFSA prior to the deadline for most schools (February 1 or 15).
- ❑ Search for scholarships at the colleges you are considering.

March 2009
- ❑ Update FAFSA application, if needed.
- ❑ Receive college acceptance letters.

April 2009
- ❑ Attend open houses for colleges that offered admittance.

May 2009
- ❑ Select a college and send a deposit to the school.
- ❑ Request final high school transcripts be sent.

Source: Timeline adapted from materials created by a National College Advising Corps program site and an application timeline created by Sallie Mae at www.salliemae.com/before_college/students_plan/select_school/getting_in/understanding/application_timeline.htm.

Potential roadblocks and solutions

Roadblock 4.1. *Our counselors have large caseloads, making it difficult for them to help each student fill out applications or register for tests.*

Suggested Approach. Guidance counselors do not need to be the only resource for helping students with critical steps to college entry. Schools can consider partnering with college access programs that provide adults to assist students. Schools also can invite volunteers from the community, including college students, graduate students, or other college graduates to assist students with the process. Another potential source of volunteers is retired professionals who previously worked in college admissions or who have knowledge of the college entry process. Schools also can ensure that teachers have adequate knowledge about the college application process to assist students who approach them with questions.

Roadblock 4.2. *The time required to travel to SAT/ACT test prep sites is a barrier for students because the sites are located so far away.*

Suggested Approach. Consider making the school a test prep site. This might make it more convenient for the students to enroll in test prep classes and might give students more incentive to register for and take the entrance exam.

Roadblock 4.3. *Our staff do not have current information about college requirements.*

Suggested Approach. Teachers and counselors may be the first people whom students turn to with questions about the college application process. Schools may want to provide teachers with a short overview of the critical milestones for applying to college at the beginning of the year and provide follow-up information at critical points throughout the year, such as when college applications are typically due. Schools may want to consider providing guidance counselors with extended professional development opportunities to update their knowledge about the college application process. Schools also should provide a workshop or other training for teachers on how to write effective letters of recommendation.

Roadblock 4.4. *Parents have limited time to participate in college visits organized by the school because of their work schedules.*

Suggested Approach. Although involving parents in college visits can be difficult because of conflicts with work schedules, students and parents should be encouraged to visit a local college campus at their convenience. These visits can be less formal than the school-organized trips, but they should provide an opportunity for parents to explore college life on campus with their child. High schools can provide parents with a college trip itinerary that includes key places to visit on campus and contact information for the college admissions office.

Roadblock 4.5. *College visits require staff time and funding that are not available at our school.*

Suggested Approach. High schools should contact the admission offices of local colleges to determine whether there are available resources to support college visits. High school alumni who attended a local college may be willing to sponsor a trip for students or may be able to link the school to other alumni who can assist with the college visit. High schools also can collaborate with college access programs that have funding to support college visits and can coordinate trips.

Recommendation 5. Increase families' financial awareness, and help students apply for financial aid

Financial aid plays an important role in making college affordable and improving access to college, especially for first-generation students and students from low-income families. However, these students and their families often have limited knowledge of financial aid opportunities and may overestimate the cost of college.[122] This can create the impression that a college education is out of reach and might discourage students from taking the necessary steps in high school to prepare for college. Even when parents and students are aware of financial aid opportunities, the financial aid application process can be a barrier, with complex rules and complicated forms that can create additional roadblocks for students.[123]

High schools can ensure that students take the necessary steps to obtain financial aid by educating students and their parents early in high school about college affordability and the availability of financial aid and by helping them identify potential sources of aid. Students benefit from hands-on assistance in meeting financial aid deadlines and completing application forms.

Level of evidence: Moderate

The panel judged the level of evidence for this recommendation as *moderate* because there is evidence that the recommended practices increased the financial assistance application rate and the college enrollment rate. Two programs with studies meeting standards with reservations informed students about financial aid opportunities and provided hands-on assistance in completing financial aid applications.[124] Both of these programs had a positive impact on financial aid applications and college enrollment. Although five other programs with studies meeting standards with and without reservations provided financial aid services, the level and intensity of these services were often unclear.[125] Since the two programs that closely correspond with the panel's recommendation had a positive impact on financial aid application and college enrollment, the panel assigned a moderate level of evidence.

Brief summary of evidence to support the recommendation

The types of practices recommended by the panel formed a major part of Talent Search and the FAFSA Experiment, and both had a statistically significant impact on application for financial aid and postsecondary enrollment.[126] Almost all Talent Search projects provide individual financial aid counseling, financial aid workshops for students and/or parents, assistance with financial aid applications, and scholarship searches.[127] The FAFSA

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122. Grodsky and Jones (2007); Horn, Chen, and Chapman (2003); King (2006); MacAllum et al. (2007); Tomas Rivera Policy Institute (2004).

123. Dynarski and Scott-Clayton (2007); Roderick et al. (2008).

124. FAFSA Experiment—Bettinger et al. (2009); Talent Search—Constantine et al. (2006).

125. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

126. FAFSA Experiment—Bettinger et al. (2009); Talent Search—Constantine et al. (2006).

127. Calahan et al. (2004).

Experiment compared two financial aid interventions. The first had a tax professional provide one-on-one assistance in filling out the FAFSA based on a family's income tax return, provide information on the family's financial aid eligibility for local colleges, and offer to submit the FAFSA at no cost. A second intervention provided families only information on their financial aid eligibility. The first intervention had a positive impact on the proportion of individuals who submitted the FAFSA and enrolled in college, whereas the second had no impact on either outcome.

Five other programs with studies meeting standards provided assistance with the financial aid application process: Upward Bound, Career Beginnings, Sponsor-a-Scholar, EXCEL, and QOP. Upward Bound and Career Beginnings had studies measuring financial aid outcomes, but neither had an impact on these outcomes. Both Sponsor-a-Scholar and Career Beginnings had a positive impact on college enrollment,[128] and the three remaining programs had no impact on enrollment.[129] The level and intensity of financial aid services varied across Upward Bound and Career Beginnings sites. Some sites provided financial aid counseling and hands-on assistance with financial aid applications, and others offered informational workshops for students and parents. Sponsor-a-Scholar mentors and QOP case managers assisted students with financial aid applications, and both programs held workshops on the financial aid process. The studies of these five programs offered limited information on the financial aid services provided for students.

How to carry out this recommendation

1. Organize workshops for parents and students to inform them prior to 12th grade about college affordability, scholarship and aid sources, and financial aid processes.

High schools should inform students and parents about financial aid and the cost of college early in high school. The panel recommends that high schools organize separate workshops to inform parents and students about financial aid.[130] The workshops should address misconceptions about college costs and build awareness of financial aid. The panel recommends holding an initial workshop on *college affordability* in 9th or 10th grade, ensuring that students and parents understand the cost of college and the aid available to make it affordable. A workshop on *scholarship and aid sources* should occur in 10th grade so that students and parents can begin to think about the sources of different forms of aid. Although students complete the FAFSA in their senior year, information about the *financial aid application process* should be covered in the junior year to prepare students for the process. These three financial aid topics are discussed next.

- **College affordability.** Students who think that college is too expensive or who lack information about the availability of aid may not take the necessary steps early in high school to prepare for college.[131] The panel recommends that high schools provide information about college affordability—both the cost of college and ways to cover the cost—starting in 9th grade. Schools can create a worksheet that

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128. Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998).

129. EXCEL—Bergin, Cooks, and Bergin (2007); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

130. Advisory Committee on Student Financial Assistance (2008); Bailis et al. (1995); Constantine et al. (2006); Cunningham, Erisman, and Looney (2007); Seftor, Mamun, and Schirm (2009).

131. Luna De La Rosa (2006).

displays potential costs for college next to potential sources of financial aid to demonstrate the realistic cost to families. Students should receive information on the typical tuition cost for two- and four-year colleges, differences between public and private institutions, and tuition estimates for local and regional colleges. High schools can provide a worksheet that has a side-by-side comparison of the cost of these schools and should help students and parents distinguish the different types of college costs, including tuition, fees, room and board, and books and supplies.

Students need to understand the types of financial aid available to cover these costs, including grants, loans, scholarships, tax credits, and work-study programs. Descriptions of financial aid, loan obligations, and grants can be confusing for individuals who may have limited interactions with banks and lending agencies; accordingly, conversations should be developed in a manner that is understandable to the student and his or her family. The workshops should encourage students and parents to estimate their financial aid eligibility using a tool to forecast eligibility based on FAFSA (e.g., FAFSA4caster, http://www.fafsa4caster.ed.gov).[132]

- **Scholarship and aid sources.** One workshop should assist students in navigating the vast array of financial aid sources to identify relevant opportunities. A list of available federal and state grants and their eligibility requirements can help students determine likely sources of aid. During the workshop, high schools also can provide a list of local and regional sources of scholarships available for students, as well as websites on which

they can search more broadly for scholarships (e.g., www.fastweb.com, www.latinocollegedollars.org). Although high school advisors often maintain information on scholarship opportunities, students may not access this information unless they regularly visit a school's advising office.[133] High schools can disseminate scholarship information during the workshop and follow up with updated or additional information on the school's website or in its monthly newsletter. Schools can designate a staff member to collect and update financial aid, scholarship, and grant opportunities for students.

- **Financial aid application process.** High schools should hold workshops to inform students and parents about the financial aid application process, including details about the process for submitting the FAFSA. Students should understand the information that is needed to complete the FAFSA and should know about the online and hardcopy versions of the application. High schools should explain that the FAFSA plays a role in determining eligibility for federal loans and grants as well as state grants, scholarships, and other forms of aid. Informing students about key concepts, such as the estimated family contribution (EFC), can help students understand the meaning of their financial aid materials. Students should understand the steps in the process that occur after submitting the FAFSA, including receipt of the student aid report and a financial aid package.

Workshops on financial aid should be held for parents as well as for students.[134] High schools should develop a plan for engaging parents and encouraging them to become invested in the financial aid

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132. Advisory Committee on Student Financial Assistance (2008).

133. Luna De La Rosa (2006).

134. Calahan et al. (2004); Gandara (2004); Schirm, Stuart, and McKie (2006).

and college application processes. For example, a parent institute that includes sessions on financial aid and other aspects of the college entry process could be held throughout the school year.[135] Inviting parents to informal social gatherings at the school, such as picnics or family dinners, can encourage parent involvement as well.[136] Offering child care at these events can make it easier for parents to attend and participate. The workshops for parents should discuss how they can help students complete the financial aid process and encourage them to assist students in meeting key deadlines.

2. Help students and parents complete financial aid forms prior to eligibility deadlines.

The panel recommends that high schools provide hands-on assistance to students and parents in completing financial aid forms prior to critical deadlines. In addition to workshops providing information about financial aid, high schools should hold workshops to assist high school seniors and their parents in completing the FAFSA form, to answer student questions, and to explain the information requested on the form.[137] The workshops should include volunteers who are knowledgeable on the FAFSA and can provide one-on-one help in completing the application form.[138] High schools should reach out to financial aid officers from local colleges who can train teachers or volunteers on the FAFSA and who can assist individual students during the workshop. Students should be notified of the information needed to fill out the FAFSA, such as income information from parents' tax forms, before the session. High schools can coordinate with the school

library or computer lab so that students can complete the FAFSA on the Internet.

Even though high schools can reach a broad group of students through line-by-line assistance at a workshop, students may have complex questions specific to their financial situation or may be uncomfortable raising questions at a group meeting.[139] Therefore, high schools should provide individual assistance or counseling following a workshop to further assist students in completing the FAFSA or other aid applications.[140] For high schools that provide mentoring services (see recommendation 3), mentors can provide one-on-one assistance if they are knowledgeable about financial aid or if they receive training.[141] Individual financial aid counseling also can be helpful for answering questions about the Student Aid Profile, award letter, or financial aid decisions that are made after a student submits the FAFSA.

Potential roadblocks and solutions

Roadblock 5.1. *Our school does not have staff who are trained on financial aid policy.*

Suggested Approach. Financial aid officers in local colleges will be knowledgeable about financial aid and can be invited to assist students during a workshop or through one-on-one sessions.[142] High schools also could invite the financial aid officer to train teachers on financial aid and the application process so that they can assist students.

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135. Tierney and Jun (2001); Standing et al. (2008).

136. Gandara et al. (1998).

137. Advisory Committee on Student Financial Assistance (2008); Cave and Quint (1990).

138. Bailis et al. (1995); Calahan et al. (2004); Seftor, Mamun, and Schirm (2009).

139. Luna De La Rosa (2006).

140. Advisory Committee on Student Financial Assistance (2008); Bailis et al. (1995); Calahan et al. (2004); Maxfield et al. (2003).

141. Johnson (1998); Pell Institute for the Study of Opportunity in Higher Education (2006).

142. Cave and Quint (1990).

Roadblock 5.2. *Guidance counselors may not have information about college costs or information about the changing nature of college costs.*

Suggested Approach. The panel suggests that high schools identify and train staff at the school who are willing to learn about financial aid and to serve as a resource for students. Math teachers or family consumer science teachers may have backgrounds that are useful for understanding the financial aid process. Establishing contacts with financial aid staff at local colleges can make it easier for teachers to stay current with information on college costs. The financial aid staff from local colleges could be useful for training teachers and other staff at the high school on financial aid topics.

Appendix A. Postscript from the Institute of Education Sciences

What is a practice guide?

The health care professions have embraced a mechanism for assembling and communicating evidence-based advice to practitioners about care for specific clinical conditions. Variously called practice guidelines, treatment protocols, critical pathways, best practice guides, or simply practice guides, these documents are systematically developed recommendations about the course of care for frequently encountered problems, ranging from physical conditions, such as foot ulcers, to psychosocial conditions, such as adolescent development.[143]

Practice guides are similar to the products of typical expert consensus panels in reflecting the views of those serving on the panel and the social decisions that come into play as the positions of individual panel members are forged into statements that all panel members are willing to endorse. Practice guides, however, are generated under three constraints that do not typically apply to consensus panels. The first is that a practice guide consists of a list of discrete recommendations that are actionable. The second is that those recommendations taken together are intended to be a coherent approach to a multifaceted problem. The third, which is most important, is that each recommendation is explicitly connected to the level of evidence supporting it, with the level represented by a grade (strong, moderate, or low).

The levels of evidence, or grades, are usually constructed around the value of particular types of studies for drawing causal conclusions about what works. Thus, one typically finds that a strong level of evidence is drawn from a body of randomized controlled trials, the moderate level from well-designed studies that do not involve randomization, and the low level from the opinions of respected authorities (see Table 1). Levels of evidence also can be constructed around the value of particular types of studies for other goals, such as the reliability and validity of assessments.

Practice guides also can be distinguished from systematic reviews or meta-analyses such as What Works Clearinghouse (WWC) intervention reviews or statistical meta-analyses, which employ statistical methods to summarize the results of studies obtained from a rule-based search of the literature. Authors of practice guides seldom conduct the types of systematic literature searches that are the backbone of a meta-analysis, although they take advantage of such work when it is already published. Instead, authors use their expertise to identify the most important research with respect to their recommendations, augmented by a search of recent publications to ensure that the research citations are up-to-date. Furthermore, the characterization of the quality and direction of the evidence underlying a recommendation in a practice guide relies less on a tight set of rules and statistical algorithms and more on the judgment of the authors than would be the case in a high-quality meta-analysis. Another distinction is that a practice guide, because it aims for a comprehensive and coherent approach, operates with more numerous and more contextualized statements of what works than does a typical meta-analysis.

Thus, practice guides sit somewhere between consensus reports and meta-analyses in the degree to which systematic processes are used for locating relevant research and characterizing its meaning.

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143. Field and Lohr (1990).

Practice guides are more like consensus panel reports than meta-analyses in the breadth and complexity of the topic that is addressed. Practice guides are different from both consensus reports and meta-analyses in providing advice at the level of specific action steps along a pathway that represents a more-or-less coherent and comprehensive approach to a multi-faceted problem.

Practice guides in education at the Institute of Education Sciences

The Institute of Education Sciences (IES) publishes practice guides in education to bring the best available evidence and expertise to bear on the types of systemic challenges that cannot currently be addressed by single interventions or programs. Although IES has taken advantage of the history of practice guides in health care to provide models of how to proceed in education, education is different from health care in ways that may require that practice guides in education have somewhat different designs. Even within health care, where practice guides now number in the thousands, there is no single template in use. Rather, one finds descriptions of general design features that permit substantial variation in the realization of practice guides across subspecialties and panels of experts.[144] Accordingly, the templates for IES practice guides may vary across practice guides and change over time and with experience.

The steps involved in producing an IES-sponsored practice guide are first to select a topic, which is informed by formal surveys of practitioners and requests. Next, a panel chair is recruited who has a national reputation and up-to-date expertise in the topic. Third, the chair, working in collaboration with IES, selects a small number of panelists to co-author the practice guide.

These are people the chair believes can work well together and have the requisite expertise to be a convincing source of recommendations. IES recommends that at least one of the panelists be a practitioner with experience relevant to the topic being addressed. The chair and the panelists are provided a general template for a practice guide along the lines of the information provided in this appendix. They also are provided with examples of practice guides. The practice guide panel works under a short deadline of six to nine months to produce a draft document. The expert panel members interact with and receive feedback from staff at IES during the development of the practice guide, but they understand that they are the authors and, thus, responsible for the final product.

One unique feature of IES-sponsored practice guides is that they are subjected to rigorous external peer review through the same office that is responsible for independent review of other IES publications. A critical task of the peer reviewers of a practice guide is to determine whether the evidence cited in support of particular recommendations is up-to-date and that studies of similar or better quality that point in a different direction have not been ignored. Peer reviewers also are asked to evaluate whether the evidence grade assigned to particular recommendations by the practice guide authors is appropriate. A practice guide is revised as necessary to meet the concerns of external peer reviews and to gain the approval of the standards and review staff at IES. The process of external peer review is carried out independent of the office and staff within IES that instigated the practice guide.

Because practice guides depend on the expertise of their authors and their group decisionmaking, the content of a practice guide is not and should not be viewed as a set of recommendations that in every case depends on and flows inevitably from scientific research. It is not only possible but

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144. American Psychological Association (2002).

also likely that two teams of recognized experts working independently to produce a practice guide on the same topic would generate products that differ in important respects. Thus, consumers of practice guides need to understand that they are, in effect, getting the advice of consultants. These consultants should, on average, provide substantially better advice than an individual school district might obtain on its own because the authors are national authorities who have to reach agreement among themselves, justify their recommendations in terms of supporting evidence, and undergo rigorous independent peer review of their product.

Institute of Education Sciences

Appendix B.
About the authors

Panel

William G. Tierney, Ph.D., (Chair) is currently University Professor and Wilbur-Kieffer Professor of Higher Education at the University of Southern California's Rossier School of Education, as well as director of the Center for Higher Education Policy Analysis. His research interests pertain to access, issues of equity, organizational effectiveness, and the changing nature of academic work. He recently concluded a three-year project that examined how to improve financial aid strategies for low-income youth and their families. He also recently concluded a project on how to improve governance in four-year colleges and universities. His recent books include *Urban High School Students and the Challenge of Access* (Peter Lang), *Preparing for College: Nine Elements of Effective Outreach* (SUNY), and *Increasing Access to College* (SUNY).

Thomas Bailey, Ph.D., is the George and Abby O'Neill Professor of Economics and Education in the Department of International and Transcultural Studies at Teachers College, Columbia University. He also is the director of the Institute on Education and the Economy at Teachers College. In 1996, Dr. Bailey established the Community College Research Center at the Institute, which pursues a wide variety of quantitative and qualitative research focused primarily on improving educational outcomes for students at community colleges, especially low-income and minority students. Dr. Bailey also directs the National Center for Postsecondary Research, funded by the Institute of Education Sciences, which is conducting rigorous evaluations of widely used strategies for low-skilled students, including intensive summer bridge programs and learning communities. He is an economist, with specialties in education, labor economics, and econometrics.

Jill Constantine, Ph.D., is a senior economist and associate director of research at Mathematica Policy Research. Dr. Constantine has led a number of large-scale research and evaluation projects related to education programs, including several in the field of higher education. She was the project director for the Evaluation of College Corps. She also served as the deputy project director and, later, as project director for the U.S. Department of Education's National Evaluation of Talent Search. Dr. Constantine also has led a number of other education projects, including those in the areas of Beginning Reading, teacher preparation, and Early Head Start. Dr. Constantine has published extensively in the education field.

Neal Finkelstein, Ph.D., is a senior research scientist at WestEd, developing research and evaluation designs that study program implementation in K–12 public schools, and overseeing randomized field trials implementation in education settings. His areas of expertise include K–12 school finance, academic preparation programs for high school youth, school-to-work, and early childhood education. Dr. Finkelstein served as director of Educational Outreach Research and Evaluation for the University of California, where he implemented research and evaluation designs on 10 campuses to study the effectiveness of K–12 student and school academic programs, particularly on postsecondary education opportunities. He also served as senior program officer for the National Research Council, supporting the investigation of equity, adequacy, and productivity in K–12 public education financing.

Nicole Farmer Hurd, Ph.D., is the executive director of the National College Advising Corps (NCAC), which is headquartered at the University of North Carolina

at Chapel Hill. The corps is a coalition of university-based college advising programs serving more than 48,000 students in 12 states. NCAC places recent college graduates in public high schools to partner with guidance counselors in an effort to increase their college-going rates. Dr. Hurd, who served as an assistant dean and director of the Center for Undergraduate Excellence at the University of Virginia, was the founding director of the College Guide Program, which served as the model for the Advising Corps. Dr. Hurd received the Governor of Virginia's Award for Volunteerism and Community Service and was the 2007 faculty recipient of the University of Virginia's Raven Award. Dr. Hurd remains an administrator in higher education, serving in the Office of Undergraduate Admissions at the University of North Carolina at Chapel Hill.

Staff

Jeffrey Max, M.P.A., is a researcher at Mathematica Policy Research, with experience conducting quantitative and qualitative research in the field of education. He has contributed to studies of teacher quality interventions, including evaluations of teacher incentives, teacher preparation, and teacher certification. His past work includes a study in one state of the transfer process from community colleges to teacher preparation programs.

Christina Clark Tuttle, M.P.P., is an education researcher at Mathematica Policy Research. Her work has focused on studying opportunities for disadvantaged students and school reform, contributing to Mathematica's evaluations of Upward Bound, QOP, the New York City voucher experiment, and charter schools. Ms. Tuttle is the deputy project director of Mathematica's national evaluation of Knowledge Is Power Program. She is a WWC certified reviewer and deputy principal investigator for the high school math topic area of the WWC.

Appendix C.
Disclosure of potential conflicts of interest

Practice guide panels are composed of individuals who are nationally recognized experts on the topics about which they are rendering recommendations. IES expects that such experts will be involved professionally in a variety of matters that relate to their work as a panel. Panel members are asked to disclose their professional involvements and to institute deliberative processes that encourage critical examination of the views of panel members as they relate to the content of the practice guide. The potential influence of panel members' professional engagements is further muted by the requirement that they ground their recommendations in evidence that is documented in the practice guide. In addition, the practice guide undergoes independent external peer review prior to publication, with particular focus on whether the evidence related to the recommendations in the practice guide has been appropriately presented.

The professional engagements reported by each panel member that appear most closely associated with the panel recommendations are noted below.

Dr. Nicole Farmer Hurd is the executive director of the National College Advising Corps, a national college peer mentoring program. Although this program is not referenced in the text of the practice guide, four of the exhibits are adapted from materials used by National College Advising Corps sites.

Appendix D.
Technical information on the studies

A search for research on college access programs in the United States from 1988 to 2008 resulted in more than 500 studies. Of these, 99 studies had causal designs and examined programs that aimed to prepare secondary students (grades 6 through 12) academically for college, assist them in completing the steps to college entry, and improve their likelihood of enrolling in college. These were reviewed according to What Works Clearinghouse (WWC) standards. Sixteen studies of 10 programs met WWC evidence standards with or without reservations. Correlational studies that used longitudinal surveys of high school students, such as the National Educational Longitudinal Study (NELS),[145] to analyze the relationship between student characteristics and college outcomes were not reviewed against WWC standards because they do not provide evidence on the effectiveness of a practice or intervention. The panel focused on the programs with studies meeting standards to define a level of evidence for each recommendation in the practice guide.

An overview of the programs with studies meeting standards is provided in Table D1, which also shows the relevance of each program for the recommendations. In many cases, a program implemented only one aspect of the panel's recommendation. For example, several programs with studies meeting standards implemented the first step of recommendation 3, mentoring services, but they did not implement steps two (peer groups) and three (career exploration). In addition, many programs implemented practices that did not fully align with the panel's recommendation, or the studies provided insufficient detail to determine the extent to which a program included the recommended practices.

College access programs consist of multiple components that address a variety of steps students must take to prepare for and enter college. The bundling of multiple practices within an access program makes it difficult to assess the effectiveness of a single practice. This presents a challenge for the practice guide, which aims to provide specific strategies that schools can implement to improve access to college. The panel reviewed implementation reports of programs with studies meeting standards to assess the relative importance of each program component and to better understand program implementation (see Table D1). The panel assigned a level of evidence for each recommendation after considering the number of programs with studies meeting standards that related to each recommendation; the degree to which programs implemented the recommendation; and the programs' impacts on high school academic performance, completion of the critical steps for college entry, and college enrollment.

The panel noted two key issues in its consideration of the evidence:

- **Service receipt by the comparison group.** Several of the studies meeting standards were effectiveness studies that compared enrollment or participation in a college access program to the existing college preparation services available to students.[146] In some cases, the comparison group received a fair amount of college access services. For example, an evaluation of Upward Bound reported that 54 percent of comparison group students

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145. National Center for Education Statistics (2002).

146. In contrast to efficacy studies that show the effect of a program relative to a control that receives no intervention or services, effectiveness studies show the effectiveness of a program relative to other available services or programs.

received college access services, and an evaluation of Career Beginnings noted that 35 percent of comparison group students received services similar to that program's.[147] Since schools often implement more than one college access program, students in the comparison group may participate in other college access programs. Among comparison students in the Upward Bound study, 14 percent participated in Upward Bound Math and Science, and 12 percent participated in Talent Search. Similarly, the study of Career Academies notes that comparison group students had the option of enrolling in other similar programs offered by their high school or district.

- **Programs operated by postsecondary institutions and community organizations.** Although the practice guide is designed to help high schools and school districts take actionable steps to increase college attendance, the panel notes that many of the programs with studies meeting standards were implemented by postsecondary institutions or community organizations. Four programs were primarily implemented by a postsecondary institution and two by nonprofit or community-based organizations. The panel focused on describing the practices it deemed were effective for high school students and could feasibly be implemented by a high school.

Studies that potentially meet standards

The panel used 15 studies that potentially met standards but were not assigned a WWC rating because there was insufficient information to assess baseline equivalence of the treatment and control groups. To meet standards with reservations, a study had to demonstrate baseline equivalence on at least three measures, including one measure of socioeconomic status (SES). Establishing baseline equivalence on SES is critical because there are differences in college enrollment rates between high- and low-SES students even when controlling for race and academic ability.[148] Table D2 lists the studies that potentially met standards that had insufficient information to establish baseline equivalence or did not demonstrate equivalence on a measure of SES.

This appendix describes the evidence used to support each of the recommendations made by the panel. After describing the level of evidence for the recommendation, we summarize the evidence used to support each recommendation. Since several of the programs with studies meeting standards are relevant for multiple recommendations, we provide a brief description of each program and its study below.

Talent Search is a federal program that informs students about the high school courses needed to prepare for college and the availability of financial aid to cover the cost of college. The program provides hands-on assistance with financial aid applications and helps students complete the college application process. Talent Search projects are operated by two- and four-year colleges and also provide college visits, academic support, and counseling. A quasi-experimental study of the program in Indiana, Florida, and Texas met standards with reservations.[149] The study examined the cohort of students in 9th grade in the 1995/96 school year and used propensity score matching to create a comparison group of students from the same schools or districts with the same demographic, socioeconomic, and academic characteristics as Talent Search participants. The program had a statistically

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147. EXCEL—Bergin, Cooks, and Bergin (2007); Upward Bound—Myers et al. (2004).

148. Advisory Committee on Student Financial Assistance (2006); Black and Sufi (2002).

149. Constantine et al. (2006).

significant impact on financial aid application and college enrollment in all three states. The findings for college persistence were smaller than the impact on enrollment and not consistently positive across the three states.

The **Sponsor-a-Scholar** program selects at-risk students from the Philadelphia public school system and offers them an opportunity to participate in a mentoring relationship with an adult volunteer for five years as well as $6,000 for college-related expenses. Mentors are expected to meet with students at least monthly, and a program coordinator monitors mentor relationships. In addition, the program provides academic support and assistance with the college application and financial aid processes, including SAT prep classes, college visits, and workshops on financial aid; selecting a college; and preparing for the challenges of college. The study of Sponsor-a-Scholar matched a total of 180 participants across four cohorts to a comparison group of Philadelphia public school students based on race, gender, school, and grade point average (GPA).[150] The author found that the program increased college attendance in the first two years after high school but had no impact on college retention.[151]

The **FAFSA (Free Application for Federal Student Aid) Experiment** offered an intervention to assist low-income families with obtaining information on financial aid eligibility and applying for financial aid. An ongoing study of the intervention randomly assigned individuals in Ohio and North Carolina to (1) the main treatment group that received assistance in completing and submitting the FAFSA (an estimate of their eligibility for financial aid) and information on financial aid opportunities, (2) an information-only treatment group that received a written estimate of each family's financial aid eligibility (but no assistance in completing the FAFSA), or (3) a control group that received an existing booklet on the importance of college and financial aid programs.[152] Staff from H&R Block conducted the intervention, providing services to individuals who received tax preparation assistance from the company. The most recent study reported initial findings within a year of the intervention. For dependent participants, who were primarily high school seniors, the main treatment had a significant positive impact on submission of the FAFSA and college enrollment, whereas the information-only treatment did not significantly impact either outcome.

Career Beginnings is a collaboration among local colleges, public schools, and the business community that offers summer jobs, education services (e.g., tutoring), assistance in preparing for college, and adult mentors. The program enrolls students in their junior year of high school and holds workshops on preparing for college, taking college entrance exams, and completing college admissions forms. A study of seven Career Beginnings sites conducted in the second year of the program randomly assigned 1,233 eligible students to Career Beginnings or a control group.[153] The study did not find a statistically significant impact on enrollment in two-year colleges or enrollment in four-year colleges, but it reported a significant impact when these two outcomes were combined (i.e.,

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150. Johnson (1998).

151. College enrollment in the second year after high school was significant at the 0.10 level. The What Works Clearinghouse (WWC) adjusts for multiple comparisons when a study examines many outcomes simultaneously since the statistical significance of findings may be overstated. However, an adjustment for multiple comparisons could not be conducted for this study because there was insufficient information to calculate an effect size and measure significance based on WWC standards (the study did not include the mean outcomes and standard deviations for the treatment and control groups).

152. FAFSA Experiment—Bettinger et al. (2009).

153. Cave and Quint (1990).

enrollment in two- and four-year colleges). The program did not have a significant effect on scholarship receipt, taking out a student loan, or college persistence.

Talent Development High School is a high school reform model for high schools struggling with poor student attendance, discipline problems, low student achievement, and high dropout rates. The model consists of Ninth Grade Success Academies that organize first-year high school students into self-contained learning communities, and Career Academies for students in grades 10 through 12 that form learning communities around a career theme. The main components of the model include a college preparatory curriculum; extended class periods; an after-school program for students with severe attendance and discipline problems; and partnerships between schools, families, and communities. Kemple et al. (2005) conducted an evaluation of the model using a quasi-experimental design that matched five Talent Development High Schools in the Philadelphia public school system to similar high schools based on race/ethnic composition and promotion rates. The program had significant positive impacts on dropping out of school and the number of high school course credits earned.

Upward Bound is a long-standing federal program designed to assist low-income students in preparing for, enrolling in, and succeeding in college. Projects are hosted primarily by four-year colleges and offer academic courses throughout the school year and during an intensive six-week summer session often held on a college campus. Other program services include tutoring, preparation for college entrance exams, extracurricular activities, college tours, and financial aid workshops. Three reports cover the evaluation of Upward Bound and include a nationally represen-

tative sample of projects.[154] At each site, applicants were randomly assigned to the program or to a control group, and the most recent follow-up study measured impacts seven to nine years after the expected date of high school graduation. This study reports no statistically significant impacts on high school outcomes (i.e., completion of course credits, GPA, or diploma), financial aid receipt, college enrollment, college selectivity, or number of college credits earned. The program increased the rate of postsecondary enrollment and the likelihood of receiving a degree, license, or certificate among students with lower educational expectations.

Career Academies are a high school reform initiative in which students are organized into small learning communities around a particular career theme. The academies combine academic and technical curricula and partner with local employers to provide career exploration and work-based learning opportunities for students. Kemple (2000, 2001, 2004, 2008) conducted a random assignment evaluation of about 1,400 students in nine schools within large, urban districts serving a disadvantaged student population. The author reports that the program did not have an impact on high school graduation or college enrollment, persistence, or degree completion eight years after students' expected graduation.

The **Quantum Opportunities Program (QOP)** is an intensive program that offers case management, mentoring, tutoring, and other education and support services for high school students. Students are matched to a case manager in 9th grade and can receive services for up to five years, even if they drop out of school or move to another district. Students receive financial incentives for participating in program activities. The random assignment study of QOP

154. Myers and Schirm (1999); Myers et al. (2004); Seftor, Mamun, and Schirm (2009).

by Schirm et al. (2006) included 1,069 students in seven sites and found no impact on attainment of a high school diploma or General Education Development (GED) test, enrollment in college or vocational training, persistence in college, or earning a bachelor's or associate's degree.

EXCEL is a scholarship incentive and support program sponsored by a public university in the Midwest that provides academic enrichment activities through summer institutes and weekend seminars on the university's campus. Students receive a scholarship to the sponsoring institution that covers tuition, fees, and books if they complete a college preparatory curriculum, maintain a B average in high school, participate in program activities, and earn a score of 18 on the ACT. The program assists students throughout high school and enlists parental participation and commitment. A relatively small random assignment study of about 70 students by Bergin et al. (2004) found that the program did not have an impact on college enrollment.

Middle College High Schools are alternative high schools designed to help students who have dropped out or are close to dropping out of high school remain in school and earn high school diplomas. The schools are located on a college campus and emphasize experiential learning, employ a thematic curriculum, offer team teaching, and provide additional support services. Dynarksi et al. (1998) evaluated a Middle College High School program in Seattle, Washington, using a randomized controlled trial. Students were randomly assigned to Middle College High School or to a control group condition in which they attended their traditional local high school. The study found no impacts on dropping out of school or the attainment of a high school diploma or GED.

Table D1. Studies of college access programs that met WWC standards with or without reservations

Brief Citation	Program	Study Design	Analysis Sample Size (students)	Study Location	Program Grade Levels	Target Population	Relevant Implementation Studies	1. Courses	2. Assess	3. Networks	4. College Entry	5. Financial Aid
						Program and Study Details		Recommendations				
Positive effects on one or more relevant outcomes												
Bettinger et al. (2009)	Free Application for Federal Student Aid (FAFSA) Experiment	Randomized controlled trial (RCT)	866[a]	Ohio and Charlotte, NC	Grade 12	Low-income families with a high school senior or a recent high school graduate[b]						X
Cave et al. (1990)	Career Beginnings	RCT	1,233	Seven of 24 program sites in the following states: New York, Indiana, Florida, California, and Ohio	Grades 11–12	Low-income students in urban areas				X	X	X
Constantine et al. (2006)	Talent Search	Quasi-experimental design (QED)	10,297 to 43,414[c]	Florida, Indiana, and Texas	Grades 9–12[d]	Low-income and potentially first-generation college students	Calahan et al. (2004)	X	X		X	X
Johnson (1998)	Sponsor-a-Scholar	QED	139 to 401[e]	Philadelphia	Grades 8–12[f]	Students with average achievement and eligible for free or reduced-price lunch		X	X	X	X	X
Kemple et al. (2005)	Talent Development High School	QED	11 schools[g]	Philadelphia	Grades 9–12	Students in schools that have difficulty with attendance, discipline, achievement, and dropouts	Kemple and Herlihy (2004)		X			
No detectable effects on relevant outcomes												
Bergin et al. (2007)	EXCEL	RCT	73	Medium-sized city in the Midwest	Grades 8–12	Minority students with average academic achievement		X			X	X
Dynarksi et al. (1998)	Middle College High Schools	RCT	394	Seattle, WA	Grades 9–12	Students who are high school dropouts or likely dropouts	Hershey et al. (1995)	X				

(continued)

Table D1. Studies of college access programs that met WWC standards with or without reservations *(continued)*

	Program and Study Details							Recommendations				
Brief Citation	Program	Study Design	Analysis Sample Size (students)	Study Location	Program Grade Levels	Target Population	Relevant Implementa-tion Studies	1. Courses	2. Assess	3. Networks	4. College Entry	5. Financial Aid
No detectable effects on relevant outcomes *(continued)*												
Kemple (2000, 2001, 2004, 2008)	Career Academies	RCT	1,458	Nine Career Academies sites: Pennsylvania, Maryland, Florida, Texas, California, and District of Columbia	Grades 9–12	Low-income students in large, urban schools	Kemple and Rock (1996); Kemple et al. (1999)			X		
Schirm et al. (2006)	Quantum Opportunity Program (QOP)	RCT	1,069	Six QOP sites: Cleveland, District of Columbia, Fort Worth, Houston, Memphis, Philadelphia, and Yakima, WA	Grades 9–12	At-risk students in schools with high dropout rates	Maxfield et al. (2003)	X	X	X	X	X
Seftor et al. (2009); Myers et al. (2004); Myers and Schirm (1999); Myers et al. (1997)	Upward Bound	RCT	2,292[h]	Nationally representative sample of Upward Bound projects	Grades 9–12	Low-income and potentially first-generation students	Moore et al. (1997)	X		X	X	X

a. This represents the sample size for the subgroup relevant to this practice guide: dependent participants who were mostly high school seniors. The study targeted low-income families with a high school senior; a recent high school graduate; or an older, independent adult who was enrolled in college or who wanted to enroll in college. The total analysis sample included 16,745 individuals.

b. The study also targeted low-income families with an independent adult who was enrolled in college or who wanted to enroll in college. However, the review of the study for this practice guide focused on the subgroup of dependent participants.

c. Sample size varies by state and analysis. Texas had a within-school analysis sample of 34,869 and an across-school analysis sample of 34,346. Indiana had a sample size of 10,927. Florida had a sample size of 43,414 for the within-school analysis, and 14,721 for the across-school analysis.

d. Talent Search can start as early as 6th grade, but the study focuses on 9th graders.

e. Sample size varies by outcome.

f. Students receive services through the first year after high school graduation.

g. The authors used individual student data but did not report the number of students in the sample. All outcome measures had a sample size of 11 schools, but some measures included more cohorts of students than did others.

h. Samples size varied for different outcomes. This represents the sample size for the analysis of college enrollment and financial aid.

Table D2. Studies of college access programs that potentially met WWC standards

Program and Study Details				Recommendations				
Brief Citation	Program	Analysis Sample Size	Study Location	1. Courses	2. Assess	3. Networks	4. College Entry	5. Financial Informa-tion
Insufficient information to establish baseline equivalence								
Allensworth et al. (2008)	College preparatory coursework requirement	Between 21,587 and 26,197 students per cohort (10 cohorts)	Chicago, IL	X				
Attewell and Domina (2008)	Advanced high school curriculum	Between 544 and 3,279 students depending on the analysis	National	X				
Crook (1990)	College Now	926 students[a]	City University of New York		X			
Dougherty et al. (2006)	Advanced Placement (AP) courses	Between 4,959 and 41,458 students per subgroup[b]	Texas	X				
Gandara (2002, 2004); Gandara et al. (1998)	High School Puente	144 students	California high schools	X		X		
Hargrove et al. (2008)	AP Courses	Between 38,907 and 42,199 students per cohort (4 cohorts)	Texas public high schools	X				
Howell, Kurlaender, and Grodsky (2009)	California Early Assessment Program	More than 1 million students	CSU– Sacramento students		X			
Jeong (2009)	AP courses	Between 12,130 and 12,870 students depending on the analysis	National	X				
Keng and Dodd (2008)	AP courses/ exams	Varies by analysis and cohort[c]	University of Texas at Austin	X				
Moreno (2002)	Puente	62 students (31 matched pairs)	California high schools	X		X		
Opuni (1999)	Project GRAD	555 students for math analysis; 547 students for reading analysis[d]	Houston, TX		X			
Standing et al. (2008)	GEAR UP	2,687 students (administrative record analysis) and 2,578 students (survey analysis)	National	X	X			
Watt et al. (2006)	AVID	20 high schools	Texas	X		X		

a. Most analyses use a sample of 926 students. One analysis of enrollment has a larger sample of 25,399 students, and another analysis has a sample of 743 students.

b. All analysis is by subgroup, resulting in varying sample sizes.

c. Sample sizes range across four cohorts and across 10 different AP subjects.

d. These sample sizes are for the specific analyses in this study eligible for a WWC review.

Recommendation 1.
Offer courses and curricula that prepare students for college-level work, and ensure that students understand what constitutes a college-ready curriculum by 9th grade

Level of evidence: Low

Despite the importance of this recommendation, the level of evidence that supports it is *low* by WWC standards. This is primarily a function of the challenge of conducting research on course taking in any experimental or quasi-experimental capacity. More than perhaps any other recommendation in this guide, the related evidence is subject to major concerns about selection bias: are the differences in observed outcomes between students who do and do not enroll in a given course attributable to the effects of that course or to some unobservable characteristics—motivation, for example—that lead students to take that course in the first place?

The evidence for taking a college-ready curriculum consists of six studies that potentially met standards.[155] Two of the studies provide mixed evidence on the effect of a rigorous high school curriculum,[156] and four studies show positive effects of Advanced Placement (AP) courses.[157] The evidence for academic advising is stronger, with six relevant programs that had studies meeting standards, but the impact of academic advising could not be isolated from other program components.[158] Despite the

limited evidence for this recommendation, the panel believes that offering the courses needed to prepare for college and informing about those courses are critical steps for improving college access.

Summary of evidence

The panel reviewed 25 studies related to college readiness and curricula. Of these, six were related to curricular offerings, none of which provided sufficient evidence to assign a WWC rating but could potentially meet standards.[159] Five of the college readiness studies examined the effects of the Advancement Via Individual Determination (AVID) program specifically: of these, four did not meet standards,[160] and the other could potentially meet standards.[161] The fourteen remaining studies addressed elements of academic and curricular advising. Of these, studies of six programs met WWC standards with or without reservations, and two of these had a positive effect on college enrollment.[162] Three did not meet evidence standards, and the remaining five could potentially meet standards.

Mixed evidence on implementing a college-ready or college prep curriculum

The panel drew on an extensive body of correlational work to reinforce its opinion

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155. Allensworth et al. (2008); Attewell and Domina (2008); Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008).

156. Allensworth et al. (2008); Attewell and Domina (2008).

157. Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008).

158. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Middle College High School—Dynarski et al. (1998);

Sponsor-a-Scholar—Johnson (1998); Upward Bound—Myers et al. (2004); QOP—Schirm, Stuart, and McKie (2006).

159. Allensworth et al. (2008); Attewell and Domina (2008); Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008).

160. Bailey (2002); Black et al. (2008); Lozano, Watt, and Huerta (2009); Watt, Huerta, and Lozano (2007).

161. Watt et al. (2006).

162. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Middle College High School—Dynarski et al. (1998); Sponsor-a-Scholar—Johnson (1998); Upward Bound—Myers et al. (2004); QOP—Schirm, Stuart, and McKie (2006).

that schools must offer courses and curricula that prepare students for college. The panel identified five studies using data from the National Center for Education Statistics (NCES)—typically, NELS, the Education Longitudinal Study (ELS), or High School and Beyond (HSB)[163]—that showed a positive correlation between course taking and outcomes related to this guide.[164] Additionally, six recent quasi-experimental studies were identified and reviewed—two on rigorous curricula and four on AP specifically—that provide more cautionary evidence (and even some unintended negative consequences) and could potentially meet standards.[165] Also, five studies of the AVID program were reviewed and demonstrated positive effects of the program, which mandates enrollment in the college prep track for all students, but most of these did not meet standards and one provided insufficient evidence to be assigned a rating (but could potentially meet standards).[166]

Two studies with quasi-experimental designs (QEDs) were identified that studied the effect of requiring students to enroll in a college prep curriculum.[167] Most recently and notably, Allensworth et al. (2008) use an interrupted time-series cohort design to measure the effects of the policy in Chicago that ended remedial classes and required college prep coursework for all students in the district. Although the study does not demonstrate

equivalence between its treatment and comparison groups, given that the samples are constructed from similar groups of students at the same schools at different periods of time, it is likely that they would be similar on observable measures. The study finds that although more students completed the 9th grade with credits in algebra and English, there was no effect on test scores, dropout rates, or the likelihood of entering college, and failure rates increased. Attewell and Domina (2008) use NELS data to demonstrate that *taking* a more intense curriculum in high school has positive effects on 12th-grade test scores and probabilities of entering and completing college. Although the authors used propensity score techniques to match samples of students, evidence of equivalence between the groups was not presented for each outcome.

Although AP has been extensively studied, few evaluations use a comparison group design to estimate the effect of AP course taking on college outcomes. The panel identified four QEDs that could not be assigned a rating because they did not provide information on the equivalence of the treatment and comparison groups. Dougherty's (2006) student-level analysis indicates that in all considered subgroups in Texas (Blacks, Hispanics, Whites, low-income students, and non-low-income students), the rate of bachelor's degree attainment in each of the three treatment groups (college-going high school graduates who pass one or more AP exams, those who take but do not pass any AP exams, and those who take one or more AP courses but do not take any AP exams) is significantly higher than the rate of bachelor's degree attainment in the control group (college-going high school graduates who do not take any AP courses or exams), but no evidence is provided on the equivalence of those groups although they are matched on SES and 8th-grade test scores. Similarly, using ELS data, Jeong (2009) finds that enrollment in AP coursework in 11th or 12th grade is associated

163. National Center for Education Statistics (1992, 2002, 2006b).

164. Adelman (1999, 2006); Gamoran and Hannigan (2000); Lee and Ready (2009); Lee, Croninger, and Smith (1997).

165. Allensworth et al. (2008); Attewell and Domina (2008); Dougherty, Mellor, and Jian (2006); Hargrove, Godin, and Dodd (2008); Jeong (2009); Keng and Dodd (2008); Spielhagen (2006).

166. Bailey (2002); Black et al. (2008); Lozano, Watt, and Huerta (2009); Watt, Huerta, and Lozano (2007); Watt et al. (2006).

167. Allensworth et al. (2008); Attewell and Domina (2008).

with a significantly higher probability of completing high school within four years after the sophomore year of high school and a significantly higher probability of entering a four-year college within four years after the sophomore year of high school. Hargrove (2008) reports that students who took both the AP course and the AP exam had higher college GPAs, earned more credits, and had higher graduation rates than did students who took only the AP course or a non-AP course in the same subject area. Keng and Dodd (2008) find that students who take AP courses and receive college credit for their exam scores have better college outcomes than do students of similar abilities who do not participate in AP, but again, no information is provided to enable the panel to determine the equivalence of those groups.

AVID is an academic intervention that targets students "in the academic middle"—those who are potentially first-generation college students earning average grades—and encourages them to enroll in the college prep curriculum at their school, including honors and AP classes. AVID places low-track students in high-track classes and provides support for the students to transition to college. AVID works hard to place its students in college prep courses. It also provides students with exposure to an academic environment similar to that found in college classrooms. College entry skills and academic survival skills including study habits, organization, management, critical reading skills, and standardized college entrance exam preparation are areas targeted in the AVID elective class.

Like AP, the intervention has been extensively but not rigorously studied. Four studies of the program with causal designs did not meet standards. One studied the effects of AVID on a set of matched schools in Texas, although not enough information was provided to determine the equivalence of the treatment and comparison groups, and found that AVID schools showed increases in enrollment in courses of high rigor and in high school graduation by the authors' calculations.

Limited evidence on academic advising

The evidence to support the panel's suggestion that schools *promote comprehension of what constitutes a college-ready curriculum* and *develop a four-year course trajectory with each 9th grader that leads to a fulfilled college prep track* is stronger but not sufficient for a moderate rating. The panel reviewed 13 empirical studies with causal designs located in the WWC literature search, including six that met standards with or without reservations,[168] four that could potentially meet standards,[169] and three that did not meet standards.[170] Of the six that met WWC standards,[171] the evaluations nevertheless could not isolate the effect of the advising practice from other aspects of the intervention.

Talent Search provides its students with information about the types of courses they should take to prepare for college. In Sponsor-a-Scholar, the mentor and a class coordinator work with students and school staff to ensure that students are enrolled in a college preparation course of study. Two quasi-experimental studies of the programs

168. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Middle College High Schools—Dynarski et al. (1998); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

169. Puente—Gandara (2002, 2004); Puente—Gandara, Mejorado, Gutierrez, and Molina (1998); Puente—Moreno (2002).

170. Bailis et al. (1995); Math and Science Upward Bound—Olsen et al. (2007); Early Academic Outreach Program—Quigley (2003).

171. EXCEL—Bergin, Cooks, and Bergin (2007); Talent Search—Constantine et al. (2006); Middle College High Schools—Dynarski et al. (1998); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

found positive effects of their respective programs on college enrollment.[172]

Other applicable college outreach programs involve academic advising in some capacity. QOP is designed so that case managers provide advice on selecting college preparatory courses in high school. EXCEL provides assistance in signing up for a college preparation curriculum in high school, and it requires that students pursue rigorous college preparation coursework to receive a scholarship. Middle College High Schools encourage disadvantaged students to enroll in college-level courses through dual enrollment opportunities on a college campus. Upward Bound projects offer academic counseling in addition to the host of courses that parallel or anticipate the high school's college prep curriculum.[173] However, rigorous studies of these four programs that met WWC standards did not demonstrate any impacts on outcomes relevant to this guide.

The panel identified causal studies of three otherwise relevant programs for this recommendation that could potentially meet standards but did not provide sufficient information to assign a rating. The Puente program ensures that students are placed in college prep courses, and a school counselor assists students with selecting college-level classes and may talk about college prep requirements during the Puente class. The reviewed studies of Puente demonstrated positive effects on high school courses fulfilling California's A–G requirements and on enrollment in a four-year college. GEAR UP provides information on the types of courses students should take to prepare for college. Although the national evaluation of the program does not yet report on high school outcomes, the authors find that students in GEAR UP schools are more likely to take above-grade-level science courses in middle school,

and for African-American students, more rigorous courses in general. The Gateway to Higher Education program, designed to increase minority opportunities for college (particularly in the areas of math and science), requires its participants to enroll in a curriculum designed to keep students on track to college, including a requirement for science courses with lab components. One study of Gateway found that it had a positive effect on high school graduation, the number of college prep courses taken, and the number of Regents exams taken, particularly in math and science. Regents tests are the standardized subject examinations required of New York State high school students.

Recommendation 2.
Utilize assessment measures throughout high school so that students are aware of how prepared they are for college, and assist them in overcoming deficiencies as they are identified

Level of evidence: Low

The panel determined that the level of evidence supporting this recommendation is *low*. In this case, the rating is not necessarily a result of limited or poor research: the ability to implement related data and assessment systems is a fairly recent development. Advances in both capabilities and resources devoted to state longitudinal datasets have been promising, but these data do not yet exist for many jurisdictions. As they become more prevalent, the panel expects that research on their use also will expand.

Although four programs with studies meeting standards included practices related to data use and additional instruction to assist students, these practices were neither isolated in the evaluation nor necessarily a major component of the program.[174]

172. Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998).

173. Moore et al. (1997).

174. Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); Talent

Studies of two programs[175] potentially meeting standards suggest that the use of data to identify and notify students of their academic progress during high school had an impact on college outcomes. There also is suggestive evidence that district- or state-wide use of assessments associated with college readiness (such as PLAN and ACT) is associated with improved college outcomes, but this correlation does not mean that requiring students to take those tests caused improved access to college.[176]

Summary of evidence

To support its recommendation, the panel reviewed 12 studies of eight programs or interventions that use assessments and data to improve college access for disadvantaged students. For those students identified as not college ready, the panel recommends that schools and districts develop individualized plans to support these students. The panel was able to derive support for this suggestion from the methods college prep and college access programs use to help students "catch up." This includes four programs with studies that met WWC standards with or without reservations;[177] two of which showed positive effects on college enrollment.[178] However, for each of these four programs, the applicability to this recommendation is most tenuous, since the relevant component involves providing tutoring and other academic support to students identified as needy.

More directly relevant to the recommendation was a series of eight quasi-experimental studies of four other programs more concentrated on using assessment measures to facilitate college readiness:

California's **Early Assessment Program** (EAP) is a collaboration with the California State University (CSU) system to ensure that college-bound high school graduates attain the level of English and mathematics skills articulated by CSU faculty as necessary for college success. CSU modified the 11th-grade California Standards Tests to assess English and math and provide timeline information to juniors about their readiness for college English and math courses. The modified test provides diagnostic information at the student level. Students who are not assessed as college ready have the opportunity to enroll in an Expository Reading and Writing Course (ERWC) in their senior year to address deficiencies. The ERWC materials encourage students' independent thinking and grappling with text. One quasi-experimental study of EAP[179] showed positive effects on reducing the need for remediation in college, but it did not provide sufficient information to ensure that the matched groups of students were equivalent *and* had matched on a measure of socioeconomic status.[180] Another compared the outcomes of students enrolled in a 12th-grade English course piloting the ERWC materials to those in a regular 12th-grade English class.[181] The authors found that the treatment group's performance on a Reading and Composing Skills Test (RCST) was higher using a one-tailed significance test; however, using a two-tailed test and adjusting for clustering, the WWC found that this difference was not significant.

College Now is an early warning and support system for students. Students

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Development High Schools—Kemple, Herlihy, and Smith (2005); QOP—Schirm, Stuart, and McKie (2006).

175. College Now—Crook (1990); California Early Assessment Program (EAP)—Howell, Kurlaender, and Grodsky (2009).

176. ACT (2008a, 2008b, 2009a, 2009b).

177. Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); Talent Development High School—Kemple, Herlihy, and Smith (2005); QOP—Schirm, Stuart, and McKie (2006).

178. Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998).

179. Howell, Kurlaender, and Grodsky (2009).

180. Ibid.

181. California State University (2005).

are evaluated in their junior high school year based on a combination of their GPA and scores on the Regents tests. They are then told if they have the option to earn college credits free of charge in a dual enrollment program, or whether they are in need of remediation (in reading, writing, or math). One quasi-experimental study of College Now could not be assigned a rating because it did not provide information on the equivalence of the treatment and comparison groups.[182] According to reported point estimates, College Now participants are more likely than nonparticipants to enroll in senior College of New York (CUNY) colleges, to enroll in bachelor of arts programs, and to enroll for second and third semesters in CUNY; College Now participants also take fewer remedial courses and earn more degree credits in the first two semesters in CUNY than do nonparticipants.

GEAR UP is a schoolwide program designed to increase college awareness and preparedness for disadvantaged students, and it is supposed to provide individualized academic support for students. According to the first report from the national study of GEAR UP programs (which does not report on any high school or postsecondary outcomes and does not provide sufficient information to assign a rating), the supplemental services provided to students, such as tutoring, were targeted to those students with academic problems and those who were not performing well on standardized assessments.[183] Another study of GEAR UP in California similarly does not provide information to establish group equivalence and shows no significant effect of GEAR UP by 8th grade.[184]

Project GRAD staff place a premium on data analysis—to understand and track students' progress toward meeting gradu-

ation requirements and to improve GPAs, achievement levels, and other student outcomes. One component of one study of Project GRAD potentially met standards. The study did not provide sufficient information to establish equivalence of its treatment and comparison groups (the other approaches do not meet WWC standards). The authors report that middle school students in the treatment group outperformed students in the comparison group on both reading and math on the Stanford 9[185] and Texas Assessment of Academic Skills (TAAS)[186] tests.[187] The other study components examined program impacts on high school outcomes but did not use a design that met WWC standards. The panel also identified a well-designed, rigorous study of Project GRAD in Houston, Texas, that nevertheless does not meet standards because the treatment and comparison schools are not equivalent in terms of race/ethnicity and the study does not provide evidence of equivalence on a measure of SES, which is a necessary condition of meeting standards for this guide.[188] However, the authors report that the program had no impact on the completion of algebra in ninth grade, high school student achievement, four-year graduation rates, or completion of a college prep curriculum on-time.

Finally, support comes from correlational studies showing positive effects from implementation of different elements of **ACT's College Readiness System**:[189] EXPLORE and PLAN, administered in 8th and 10th grades as precursors to the ACT; the ACT (along with the SAT, one of two national college admissions tests); and COMPASS, the national college placement test administered by ACT. The argument for administering such exams jurisdiction-wide to all

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182. Crook (1990).

183. Standing et al. (2008).

184. Cabrera et al. (2006).

185. Pearson (1996).

186. Texas Education Agency (2002).

187. Opuni (1999).

188. Snipes et al. (2006).

189. ACT (2008a, 2008b, 2009a, 2009b).

students is that it sets signals for academic achievement and provides everyone, even students who had not previously considered college, with the chance to identify academic strengths and weaknesses. The correlational studies conducted by ACT found that outcomes improved jurisdiction-wide for the entire population of tested students at rates similar to those of college-bound students nationally.

Recommendation 3.
Surround students with adults and peers who build and support their college-going aspirations

Level of evidence: Low

The panel defined the level of evidence for this recommendation as *low* because of limited evidence that the recommended practices improve college enrollment rates. Although the panel identified evidence that supports mentoring—the first step of this recommendation—there is limited evidence on the other two steps. Six programs with studies meeting or potentially meeting standards are aligned with one or more steps in this recommendation.[190] Three of these programs had a positive impact on college enrollment,[191] and three did not impact enrollment.[192] However, isolating the impact of the recommended practices is difficult because these programs included a variety of other strategies. A few correlational studies reported a relationship between having friends with college plans and college enrollment, but they do not provide evidence on the causal effect of college-going peers.[193] Despite the low evidence rating, the panel believes that linking students with college-going adults and peers is important for building aspirations and supporting college entry.

Summary of evidence

The panel separately reviewed studies for each of the steps that make up this recommendation.

Mixed evidence on mentoring

Four programs had studies that met or potentially met standards and provided mentoring services.[194] Studies of Sponsor-a-Scholar, Career Beginnings, and Puente reported a positive impact on college enrollment,[195] whereas a study of QOP found no impact on college enrollment.[196]

The Sponsor-a-Scholar program matched Philadelphia public school students to an adult mentor for five years starting in 9th grade. Mentors were expected to meet with students at least monthly to monitor their academic performance and assist them in preparing and applying for college. For example, the program asked mentors to review students' report cards for each grading period and to help students stay on track academically. A program coordinator recruited mentors, matched them to students, and monitored mentoring relationships. The quasi-experimental study of Sponsor-a-Scholar found that the program increased college attendance in the first two

190. Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998); Puente—Gandara (2002); Career Academies—Kemple (2004); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

191. Career Beginnings—Cave and Quint (1990); Puente—Gandara (2002); Sponsor-a-Scholar—Johnson (1998).

192. Career Academies—Kemple (2004); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

193. Horn and Chen (1998); Hossler, Schmit, and Vesper (1999); Sokatch (2006).

194. Career Beginnings—Cave and Quint (1990); Puente—Gandara (2002, 2004); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006).

195. Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006).

196. QOP—Schirm, Stuart, and McKie (2006).

years after high school but had no impact on whether students remained enrolled between the first and second years.[197]

The Career Beginnings program offered students a two-year relationship with an adult mentor in addition to academic tutoring, summer jobs, and various college preparation activities. Mentors were college-educated professionals who served as role models for students and assisted them in developing career goals and applying to college. The random assignment study of Career Beginnings did not report a significant impact on enrollment in two-year colleges or enrollment in four-year colleges, but it reported a significant impact when these two outcomes were combined (i.e., enrollment in two- and four-year colleges). Although mentors were an important component of the Career Beginnings approach, the program included several other activities, such as summer employment, that make it difficult to assess the role of mentoring in contributing to program impacts.

QOP assigned a case manager to at-risk students for five years who was expected to serve in a mentoring role. Case managers worked with about 15 to 25 participants and often developed relationships described as similar to "that of a caring aunt or uncle."[198] In addition to mentoring services, the program offered supplemental instruction, support services, and community service activities. The random assignment study of QOP in seven sites found no impact on college enrollment, retention, or attainment.[199]

The High School Puente program had one study that potentially meets standards. The quasi-experimental study did not provide sufficient information to assign a rat-

ing. The study matched 72 Puente students in three California high schools to 72 non-Puente students based on grades, reading scores, ethnicity, social background, and gender.[200] However, there was insufficient information to determine whether these two groups were comparable on a measure of socioeconomic status (a requirement for quasi-experimental studies in this guide to meet standards with reservations). The author reports a significant positive effect on four-year college enrollment but did not provide information on the statistical significance of other college enrollment outcomes. The Puente program recruited mentors from the local community to serve as role models for Latino high school students and to spend time with students' families. As a note of caution, the study found that mentors had difficulty establishing a relationship with 9th-grade students who were often focused on the day-to-day challenges at school rather than on long-term education plans. The authors suggest this may have been related to the characteristics of the mentors themselves, and they report that group activities for mentors and students and efforts by mentors to reach out to parents were useful strategies.

The panel relied on three additional programs for mentoring practices, although these programs had studies that did not meet WWC standards. The College Bound program recruits Boston College students to mentor students in local high schools. The mentors develop a relationship with students through monthly meetings and advise them about the college application and selection processes.[201] The Washington State Achievers program, which also includes college scholarships, links students to "hometown mentors" from the community who assist students with the college and financial aid application processes be-

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197. The author reports that college enrollment in the second year after high school was significant at the 0.10 significance level.

198. Maxfield et al. (2003).

199. Schirm, Stuart, and McKie (2006).

200. Gandara (2002).

201. Ladd (1992).

ginning in their junior year.[202] The I Have a Dream program does not match students to mentors, but it has a program coordinator who is expected to assist and support students throughout middle and high school on their path to college.[203]

Limited evidence on the role of peers

Three programs with studies that met or potentially met standards focused on the role of peers, including one that had a positive impact on college enrollment,[204] one that had no impact on enrollment,[205] and one with a study that did not measure college enrollment.[206] All three programs organized students into groups that facilitated academically oriented friendships. However, these programs do not provide direct evidence on the role of peers because they consist of several other components designed to improve college access.

Only one program with a study meeting standards relied on an approach relevant for this recommendation.[207] Career Academies group students into small learning communities of 50 to 75 students who take academy classes together throughout high school. The program encouraged collaboration among students and expected the academies to serve as "communities of support" for students. This approach promoted the formation of academically oriented peer groups among students. Although a large random assignment study of Career Academies in nine schools found no impact on high school graduation, college enrollment, or postsecondary attainment, the effectiveness of the small learning community approach to career exploration activi-

ties cannot be distinguished from other aspects of the program.[208]

The panel used practices from two programs with studies that potentially meet standards. The Puente program encouraged the formation of peer groups by mixing high- and low-achieving Latino students in an English class for two years.[209] In addition, Puente students participated in a club that supported their college preparation activities. The study of Puente potentially meets standards because there was insufficient information to assess baseline equivalence of the treatment and control groups. The study reported a significant positive impact on four-year college enrollment, but it did not provide information on statistical significance for other types of college enrollment.

The AVID program places promising students on a college preparatory track and provides multiple activities to prepare and support these students academically. The program encourages the formation of a peer group by having students take a yearlong AVID course that teaches study skills, provides tutoring, and assists students in preparing for college. The program promotes a group identity by using an AVID logo, setting aside a classroom for AVID students, and providing opportunities for students to collaborate.[210] One study of AVID potentially meets standards, but it provided insufficient information to assess equivalence of the matched treatment and comparison groups. The study matched 10 AVID high schools to 10 non-AVID high schools based on student race and SES as well as school size, type (i.e., urban or rural), and accountability rating.[211] The authors did not report college enrollment outcomes but found a positive effect of the program on school-level achievement.

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202. Engle, Bermeo, and O'Brien (2006).

203. Kahne and Bailey (1999); Kuboyama (2000); McGrath and Hayman (1997).

204. Gandara (2004).

205. Kemple (2004).

206. Watt et al. (2006).

207. Kemple (2004).

208. Ibid.

209. Gandara (2004).

210. Guthrie and Guthrie (2002); Mehan (1996).

211. Watt et al. (2006).

However, the study did not report the statistical significance of this finding.

Lack of evidence on career exploration

The panel identified two programs with studies meeting standards that offered career exploration activities, although neither had an impact on college enrollment.[212] Career exploration activities represent a major component of the Career Academies approach and are commonly implemented by Upward Bound sites. The panel could not isolate the effect of career exploration activities because both programs consist of several other components—Career Academies offer a comprehensive school-to-work approach that organizes students into small learning communities and combines vocational and college preparatory curricula, and Upward Bound prepares students academically for college through classes offered during the school year and summer.

Career Academies implement a variety of career exploration activities, including speakers from the business community, visits to employer sites, career fairs, and job shadowing.[213] Career Academies often offer a sequence of career activities, beginning with interest inventories and employer site visits, and leading up to job shadowing and internships.[214] Career Academies students take classes in learning communities that are organized around different career themes.

Most Upward Bound grantees offer career development activities, such as career planning assistance, meetings with employers, employer site visits, and job shadowing.[215] Although detailed information about these activities is not available, an implementation study of Upward Bound found that a majority of sites provide job-shadowing opportunities. A random assignment study of Upward Bound found no significant impact on high school completion, college enrollment, or college credits earned.[216] The program did have a positive significant impact on four-year college attendance for first-generation students. However, these impacts cannot be attributed specifically to career development activities because Upward Bound included several other components.

The panel relied on practices from four programs that did not have studies meeting standards. The Lansing Area Manufacturing Partnership (LAMP) linked students to work-based learning experiences in a local General Motors factory, including several hands-on activities. Although a study of the program matched participants to nonparticipants based on gender, race, age, GPA, and school, the two groups were not matched on an indicator of socioeconomic status.[217] An implementation study of the School-to-Work Opportunities Act included surveys of school-to-work partnerships, student surveys, and case studies of eight states.[218] According to the study, students viewed one-on-one interaction with an adult—job shadowing, paid jobs, and unpaid internships—as the most useful type of career exploration activity. An implementation of GEAR UP in Austin, Texas, describes how the program used online interest inventories to identify students' career interests and help them understand the knowledge and skills needed for their area of interest.[219] The Roads to Success program, which is being evaluated in a random assignment study

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212. Kemple (2004); Seftor, Mamun, and Schirm (2009).

213. Kemple, Poglinco, and Snipes (1999).

214. Ibid.

215. Moore et al. (1997).

216. Myers et al. (2004); Seftor, Mamun, and Schirm (2009).

217. MacAllum et al. (2002). In addition, the study did not provide information to assess the equivalence of the treatment and comparison groups used in the analysis.

218. Hershey et al. (1999).

219. Austin Independent School District, Office of Program Evaluation (2002).

that has not produced impact findings yet, helps students link their career interests and education plans.[220]

Recommendation 4.
Engage and assist students in completing critical steps for college entry

Level of evidence: Moderate

The panel judged the level of evidence for this recommendation to be *moderate.* Six programs with studies meeting standards with or without reservations provided assistance with the college entry process.[221] Although these programs consisted of other strategies to prepare students for college, all of them focused on helping students complete the steps to college entry. Three of the programs had a positive impact on college enrollment,[222] and three had no impact on enrollment.[223] The panel notes that the evidence for this recommendation focuses on programs that serve low-income and first-generation students with average academic achievement. Only one program, which did not find an impact, specifically targeted students at risk for dropping out of high school.[224] Since programs that assisted students with the college entry process did not consistently

lead to positive impacts, the panel defined the level of evidence for this recommendation as moderate.

Summary of evidence

Six programs that assisted students with the college entry process had studies that met standards.[225] Three of these programs had positive effects on college access or college enrollment outcomes,[226] and three had no impact on college enrollment.[227]

A main purpose of the Talent Search program is to assist students with the college entry process. The program sites often have staff who work directly with students to counsel and advise them about the college admissions process.[228] An implementation study found that more than 90 percent of projects provide college orientation activities, college visits, and counseling.[229] In addition, project directors described college visits as one of the top two activities that contributed to program objectives.[230] The large-scale study of Talent Search participants in three states found positive effects on the percentage of students taking college entrance exams and college enrollment.[231]

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220. Roads to Success (2008a, 2008b).

221. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

222. Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998).

223. EXCEL—Bergin, Cooks, and Bergin (2007); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009). One of the studies finding no detectable effects on college access or enrollment outcomes found mixed effects on high school academic outcomes, which the panel deemed not relevant for this recommendation.

224. QOP—Schirm, Stuart, and McKie (2006).

225. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

226. Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998).

227. EXCEL—Bergin, Cooks, and Bergin (2007); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009). One of the studies finding no detectable effects on college access or enrollment outcomes found mixed effects on high school academic outcomes, which the panel deemed not relevant for this recommendation.

228. Calahan et al. (2004).

229. Ibid.

230. Ibid.

231. Constantine et al. (2006).

The Sponsor-a-Scholar program in Philadelphia had an academic coordinator who set up college entrance exam preparation classes, planned college visits, and held workshops on selecting a college and preparing for the challenges of college.[232] In addition, mentors were expected to provide one-on-one assistance with the college admissions process. The author reports that the program had a significant positive impact on a broad measure of college preparation activities that summed up the number of preparation activities in which students participated.

There is limited information on the college preparation activities offered by the seven Career Beginnings sites that were studied. The random assignment study found that sites offered workshops or classes on taking college entrance exams and classes on completing college admissions forms.[233] Career Beginnings had a positive impact on college enrollment; the direct effect of the college preparation activities cannot be determined, however, since the extent of these college preparation activities was not clear.

Upward Bound projects helped students prepare for college entrance exams (PSAT and SAT) and provided assistance with college applications and financial aid forms.[234] The program also provided opportunities for students to visit colleges, and many sites encouraged students to live on campus for the summer academic course sessions. Although there was limited information on the quality or intensity of these services, they are a common part of program services. Upward Bound had no effects on enrollment or persistence in two- or four-year colleges for program participants, but it had a significant impact on four-year college attendance for students with low academic expectations.

An implementation study of the QOP sites suggests several types of activities to assist students in completing the steps for college entry. Case managers encouraged students to take college entrance exams and in some sites paid the exam registration fees.[235] Several QOP sites also helped participants prepare for entrance exams by offering tutoring or purchasing training software. A few sites also purchased books and CD-ROMs that provided enrollees with test-taking tips and sample examinations. Case managers provided assistance in completing college applications and organized college visits for students. The large-scale random controlled trial of QOP found no significant effects on college enrollment. Perhaps most relevant to this recommendation, study authors also noted that QOP's policy of having a case manager on duty for a large number of hours weekly was somewhat unrealistic and therefore not always implemented according to the QOP model.

EXCEL staff encouraged and guided students through the college application process. The EXCEL program also held workshops on campus and allowed students to live in college dormitories during the summer sessions. The summer institutes provided writing instruction to assist students in writing essays. A small random assignment study of EXCEL in one Midwestern city found no detectable effects on college enrollment the fall after high school graduation.[236]

Three additional programs had studies that potentially met standards[237] or did not meet standards.[238] The panel judged the practices discussed in the studies to

232. Johnson (1998).

233. Cave and Quint (1990).

234. Seftor, Mamun, and Schirm (2009).

235. Maxfield et al. (2003).

236. Bergin, Cooks, and Bergin (2007).

237. Puente—Gandara (2002); AVID—Watt et al. (2006).

238. I Have a Dream—Kahne and Bailey (1999); I Have a Dream—Kuboyama (2000); I Have a Dream—McGrath and Hayman (1997).

be similar to practices implemented in programs with studies that met standards with or without reservations and included practices described in these studies as supplemental evidence of a practice.

A study of the AVID program potentially meets standards but could not be rated because there was insufficient information to assess baseline equivalence. Students participating in AVID were given extra coaching on how to write statements of purpose and how to fill out college applications and financial aid forms, and they were reminded about test and application deadlines. At one site, to familiarize students with college catalogs and to help them choose an appropriate college, students received a handout called "Choosing Your College" that contained a checklist of information typically found in college catalogs and were instructed to fill in the information for a particular college according to the assigned checklist.[239] The study that potentially met standards did not measure the program's effect on college enrollment but reported a positive effect on school-level achievement. However, the study did not provide information on the statistical significance of this finding.

Counselors from the Puente program arrange college visits, including overnight trips, for students.[240] Parents often are invited on these visits to make them more comfortable with the college environment. The program also introduces students to representatives from Latino student groups on campus. A study of the Puente program potentially meets standards and reported a positive impact on four-year college enrollment. A national study of GEAR UP that potentially meets standards found that college visits were common across all of the sites and that the number of college visits

offered grew over time.[241] The study focused on program implementation in the 7th and 8th grades, but it did not provide sufficient information to assess baseline equivalence. The initial findings described the program's effect on students' and parents' education expectations and knowledge of postsecondary opportunities.

In the I Have a Dream program, sites worked individually with and monitored each participant's college application process. One site hired a college counselor from a prestigious private school to meet with each participant, and another site assigned an AmeriCorps member to focus entirely on this process.[242] There were no studies of the I Have a Dream program that met standards.

Recommendation 5. Increase families' financial awareness, and help students apply for financial aid

Level of evidence: Moderate

The panel judged the level of evidence for this recommendation as *moderate* because there is evidence that the recommended practices increased the financial assistance application rate and the college enrollment rate. Two programs with studies meeting standards with reservations informed students about financial aid opportunities and provided hands-on assistance in completing financial aid applications.[243] Both of these programs had a positive impact on financial aid application and college enrollment. Although five other programs with studies meeting standards with and without reservations provided financial aid services, the level and intensity of

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239. Mehan (1996); Watt et al. (2006).

240. Gandara (2004); Grubb, Lara, and Valdez (2002).

241. Standing et al. (2008).

242. Kahne and Bailey (1999); Kuboyama (2000); McGrath and Hayman (1997).

243. FAFSA Experiment—Bettinger et al. (2009); Talent Search—Constantine et al. (2006).

these services were often unclear.[244] Two of these studies measured financial aid outcomes and found no impact,[245] and the findings for college enrollment were mixed across these five studies. Since the two programs that closely correspond with the panel's recommendation had a positive impact on financial aid application and college enrollment, the panel assigned a moderate level of evidence.

Summary of evidence

Seven programs with studies meeting standards offered some form of financial aid assistance, often informing students and parents about financial aid or helping students with financial aid applications.[246] The types of practices recommended by the panel formed a major part of Talent Search and the FAFSA Experiment, and both had a significant impact on application for financial aid and college enrollment.[247] Five other programs offered financial aid assistance, but the studies of these programs did not provide sufficient information on the type and frequency of these services. Among these five programs, two had studies measuring financial aid outcomes and found no impact,[248] two found a positive impact on college

enrollment,[249] and three found no impact on enrollment.[250]

The FAFSA Experiment compared two interventions designed to improve the financial aid and college enrollment rates. The main intervention consisted of an H&R Block tax professional using a family's income tax return and a structured protocol of questions to fill out the FAFSA, offering to submit the FAFSA form free of charge, and providing information on financial aid eligibility for local colleges. A second intervention offered families information on their financial aid eligibility based on their tax return without assisting them in completing or submitting the FAFSA. The main intervention had a significant positive impact on financial aid application and college enrollment for the dependent participants, who were mostly high school seniors. The information-only intervention did not have an impact on either outcome.

A primary goal of Talent Search is to inform students about the availability of financial aid, provide financial aid counseling, and assist students in completing the FAFSA. Almost all Talent Search projects report providing these services, and both students and project staff emphasize the importance of financial aid assistance.[251] Programs often provide general information that raises awareness of financial aid in the middle school and early high school grades and then offer counseling and one-on-one support in filling out the FAFSA in the junior and senior years. A quasi-experimental study of Talent Search students in Florida, Indiana, and Texas found that the program had a substantial impact on the financial aid application rate and postsec-

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244. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

245. Career Beginnings—Cave and Quint (1990); Upward Bound—Seftor, Mamun, and Schirm (2009).

246. EXCEL—Bergin, Cooks, and Bergin (2007); FAFSA Experiment—Bettinger et al. (2009); Career Beginnings—Cave and Quint (1990); Talent Search—Constantine et al. (2006); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

247. FAFSA Experiment—Bettinger et al. (2009); Talent Search—Constantine et al. (2006).

248. Career Beginnings—Cave and Quint (1990); Upward Bound—Seftor, Mamun, and Schirm (2009).

249. Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998).

250. EXCEL—Bergin, Cooks, and Bergin (2007); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

251. Calahan et al. (2004).

ondary enrollment.[252] The authors found effect sizes between 0.34 and 0.67 for the financial aid application rate, and persistence of these effects when controlling for high school graduation.

Five other programs with studies meeting standards provided assistance with the financial aid process, but detailed information on their financial aid practices was lacking.[253]

Although Upward Bound focuses on providing academic coursework during the school year and summer, the program offers several nonacademic services as well. An implementation study of Upward Bound found that most sites provide assistance with financial aid, but the intensity of these services varied widely.[254] Some sites offered a workshop on financial aid, whereas others met with students and parents on multiple occasions to assist with the financial aid application process.[255] The prevalence of one-on-one financial aid counseling could not be determined from the available studies. The random assignment study of the program did not find a significant impact on financial aid application or receipt, or on postsecondary enrollment or attainment.[256] The study did report a significant impact on financial aid application for students who participated in the program for a longer period of time.

The implementation of financial aid assistance in the Career Beginnings program is not clear from the seven sites included in the study meeting standards.[257] The study reports that one site enlisted the help of a financial aid officer and another held classes on completing financial aid forms, although there is limited information to assess the prevalence and quality of financial aid services. A random assignment study of Career Beginnings found that the program did not have a significant impact on scholarship receipt or student loan usage, but it did increase college enrollment (i.e., enrollment in a two- or four-year college).

Sponsor-a-Scholar mentors and QOP case managers assisted students with financial aid applications, and both programs held workshops on the financial aid process.[258] The studies of both programs did not provide enough detail to determine the frequency or quality of these services, and neither study measured financial aid outcomes. As described, Sponsor-a-Scholar had a positive impact on college enrollment, and QOP had no impact on college enrollment, retention, or degree attainment. Although a study of EXCEL notes that the program assisted parents with financial aid forms, there is no additional information to determine the financial aid assistance provided through the program.[259] A relatively small random assignment study of about 70 students found that the program did not have a positive impact on college enrollment.[260]

The panel examined two programs with studies that potentially meet standards for practices related to engaging parents. Parent involvement formed a major part of the Puente program (described in recommendation 3). The program has parents attend interviews along with students, hosts

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252. Constantine et al. (2006). The study found differences in the financial aid application rate between participants and nonparticipants of 14, 17, and 28 percentage points in Indiana, Florida, and Texas, respectively.

253. EXCEL—Bergin, Cooks, and Bergin (2007); Career Beginnings—Cave and Quint (1990); Sponsor-a-Scholar—Johnson (1998); QOP—Schirm, Stuart, and McKie (2006); Upward Bound—Seftor, Mamun, and Schirm (2009).

254. Moore et al. (1997).

255. Ibid.

256. Seftor, Mamun, and Schirm (2009).

257. Cave and Quint (1990).

258. Johnson (1998); Schirm, Stuart, and McKie (2006).

259. Bergin, Cooks, and Bergin (2007).

260. Ibid.

informal parent nights, and holds one-on-one parent meetings with a Puente counselor.[261] Parents receive financial aid information and counseling. A national study of GEAR UP that potentially meets standards created a matched comparison group of GEAR UP and non–GEAR UP schools, but it did not provide sufficient information to assess equivalence of the analysis sample. As part of the study, the authors found that sites that effectively engaged parents used two practices: 9- to 10-week parent institutes and individual counseling sessions for parents and children.[262] The institutes consisted of a series of workshops to inform parents about how to help their children prepare for college.

The panel considered practices from three other programs that provided financial aid information or assistance, but it did not have a study that met standards. The Baltimore College Bound program conducted presentations on financial aid for students in the 9th and 10th grades and provided individual assistance with financial aid and college applications in the 11th and 12th grades. A quasi-experimental study of the program compared participants and nonparticipants but did not include an indicator of socioeconomic status to match students. The Kids2College program provided financial aid information to middle school students as part of its college awareness program that helped prepare students for college. A study of the program examined the pre- and post-program outcomes of participants, but it did not have a comparison group of students.[263] The Neighborhood Academic Initiative (NAI) coordinates a Family Development Institute that includes information on financial aid and works with a financial aid officer from the University of Southern California to assist students in completing financial aid application forms.[264] The panel did not identify any comparison group studies of the NAI.

261. Grubb, Lara, and Valdez (2002).
262. Standing et al. (2008).
263. Cunningham, Erisman, and Looney (2007).
264. Tierney and Jun (2001).

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