

Proposal 6: Addressing the Academic Barriers to Higher Education

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Introduction

A postsecondary education confers numerous benefits both to the individual and to society, including higher earnings, lower rates of unemployment and government dependency, an increased tax base, and greater civic engagement. Access to higher education remains a challenge for many families, however. In 2010, approximately 82 percent of students from high-income families attended college in comparison to only 52 percent of students from low-income families (National Bureau of Economic Research n.d.).¹ There are also large differences in rates of college completion by income: among students who met a minimum standard of being academically qualified for college, 89 percent of high-income students completed a bachelor's degree within eight years, whereas only 59 percent of low-income students did so (Adelman 2006).

There are many barriers to college access and success. One major barrier is affordability, as college prices and student debt levels have risen to alarming heights. For many students, however, academic preparation may be an equally formidable barrier to postsecondary education. This is not due to college selectivity—about 80 percent of four-year colleges and nearly all two-year colleges have little to no admissions requirements. Instead, students are required to pass academic placement tests and demonstrate sufficient readiness for postsecondary study. Those who do not pass are placed into remedial or developmental courses.

Estimates suggest that more than one-third of all first-year students take some form of remedial coursework in either

English or mathematics, but this figure can be as high as 60 or 70 percent of students at some institutions (Bettinger, Boatman, and Long 2013; Complete College America 2012; National Center for Education Statistics [NCES] 2003).² Students placed into remedial or developmental programs are most often held back from taking college-level courses, and as a result, remediation has effectively become the gateway (or barricade) to postsecondary-level training.³

While the aim of remedial and developmental courses is to provide academically underprepared students with the skills they need to succeed in college and in the labor market, being placed into the courses also has important implications for a student's higher-education prospects. Students are forced to pay college-level prices for high school-level courses; there are also large government subsidies at stake given federal funding and state appropriations that subsidize college costs and operating budgets. Time spent in remediation can also delay completion of a postsecondary degree. Credits earned from remedial courses often do not count toward a student's degree. Thus, it takes students longer to complete their studies, and this increases the chances that a disruption will derail them from progressing. The extended time needed to obtain a degree could also affect a student's financial aid, as a student's eligibility for aid may expire; students who need to complete significant remediation could run out of financial support before being able to finish.

Unfortunately, research suggests that remediation programs do not do a good job of improving students' outcomes. When comparing similar students in and out of remediation, some

researchers have found small positive effects, but most of the research suggests no long-term effects—or even negative effects—from being placed into a remedial or developmental course (Bettinger and Long 2009; Boatman and Long 2010; Calcagno and Long 2008; Martorell and McFarlin 2011). While there are still unanswered questions about how the effects differ by type of student, most researchers, practitioners, and policymakers have concluded that the current remedies we have to address the fact that so many students are academically underprepared for college are not sufficient, and may in fact involve serious costs for students, institutions, and taxpayers.

There is ongoing debate about the best way to address students' academic needs. Many states are confronting questions about who should deliver remediation and how it should be offered. Some are considering ways to limit the courses, shift their locations, or pass on the costs of the courses to students or school districts. While states lament the need for remediation and debate how to manage it, however, most of the current policy efforts do not focus on how to improve programs or help students avoid remediation altogether.

This policy memo offers three key recommendations for better addressing the academic preparation problem with the hope of improving rates of college success. The recommendations focus on actions that could be taken by states, university systems, and school districts. The federal government could also play an important role by creating incentives for states and institutions to address these issues or by supporting a central organization with the purpose of providing guidance on best practices to states and institutions. This proposal's recommendations are as follows:

1. Improve placement in college remediation classes.

Improving how students' academic preparation levels are assessed is the first step in better tailoring supports for their needs. Better assessment is also necessary to reduce the number of students who are incorrectly placed into remediation due an opaque process or bad testing day.

- 2. Provide better college remediation services.** By using technology, support services, and innovative pedagogies, remediation programs could do a much better and faster job in helping to prepare students for future success with college-level material. Several states are already experimenting with promising practices, including combining basic-skill attainment with college-level coursework, and using learning technology to better target students' needs.

3. Adopt measures to prevent the need for remediation.

Several states are encouraging students to take college readiness assessments in high school so that they can use this early information to make better course selections

and avoid remediation altogether. Working to better align curricula and strengthen links between K–12 and higher education could also improve the likelihood that students are academically prepared for college.

The Challenge

BACKGROUND: POSTSECONDARY REMEDIATION IN THE UNITED STATES

Multiple studies point to the fact that high school graduates are often not academically prepared for college. Some estimates suggest that only about one-quarter of high school graduates complete a rigorous academic curriculum (NCES 2010).⁴ While academic preparation is a problem for many students, it is a problem that especially affects low-income and minority students. According to Greene and Foster (2003), only 32 percent of students leave high school at least minimally prepared for college, and the proportion is much smaller for African-American and Hispanic students (20 and 16 percent, respectively).⁵ Low levels of academic preparation are the result of poor course selection, lack of academic rigor, and a limited supply of advanced courses at some schools. In addition, the lack of alignment between the K–12 and postsecondary education systems frequently results in confusing messages about how and what students should do to enter and succeed in college (Venezia, Kirst, and Antonio 2003).

Although many underprepared high school students will fail to continue their educations, the large proportion of those who enter higher education will be placed into remediation. A substantial number of adult students, including recent immigrants and workers displaced by structural shifts in the labor market, also enroll in remedial and developmental courses. Traditionally, the purpose of remedial or developmental education has been to address whatever was missed in high school (Education Commission of the States 2012). Nonselective public institutions provide the bulk of remediation, with rates being highest at two-year colleges (Bettinger and Long 2009).

The need for remediation is established based on an exam or assessment taken when the student first arrives on campus. Colleges then assign students to a specific course level based on their scores on the placement test as well as, possibly, high school courses and grades. Placement into mathematics remediation is more common than placement into English (i.e., reading and/or writing) remediation, but participation in English remediation may be a more serious concern as some evidence suggests that reading and writing deficiencies have more-negative effects on a student's college success (Bailey, Jeong, and Cho 2010; Bettinger and Long 2009; McCabe 2001).

The vast majority of institutions require students to complete their remedial courses before they are allowed to enroll in college-level courses (NCES 2003). For students in need of multiple remedial courses, this could mean more than a year of coursework before progressing to actual college-level material. Although remedial courses are offered for credit and count toward a student's overall GPA, remedial courses rarely count toward graduation requirements (Bettinger and Long 2007).

As such, remediation becomes a costly investment incurred by students, institutions, and the government. Although estimates vary depending on the source, they all suggest that remediation is expensive in multiple ways and for multiple stakeholders. Alliance for Excellent Education (2006) estimated that the cost of the delivery of remediation nationwide totaled \$1.4 billion in the form of direct costs to students and institutions. Further costs would result from the lost earning potential of those remedial students who drop out of college without completing a degree. Another study estimated the annual cost of remediation to be between \$1.9 and \$2.3 billion at community colleges and another \$500 million at four-year colleges (Strong American Schools 2008), while yet another study estimates that states and students spent more than \$3 billion on remedial courses in 2011 (Complete College America 2012). The most recent estimate suggests that the national direct cost of remediation is actually as high as \$7 billion annually (Scott-Clayton, Crosta, and Belfield 2012). This estimate does not account for the opportunity cost of time for students enrolled.⁶

EVIDENCE OF THE PROBLEM AND THE CURRENT POLICY DEBATES

Most current models of remediation are not working well: students placed into remediation are far less likely to persist and graduate from college. Fewer than 50 percent of students referred to remediation actually complete the entire sequence. This percentage is even lower for men, older students, African-American students, part-time students, and students in vocational programs. The students assigned to the lowest levels of math remediation are the least likely to advance into college-level courses, with only 10 percent of this group ever completing a college-level math course (Bailey, Jeong, and Cho 2010).

While disconcerting, these statistics on completion tell only part of the story. Longer-term educational outcomes, such as total credit accumulation and degree completion, are also much lower for students placed into remediation (Adelman 2006; Bailey 2009; Bettinger and Long 2005; Complete College America 2012). This fact alone is not evidence that remedial programs do not work, however. Since students who are placed

in remedial courses have lower levels of preparation than those who are not placed into remediation, one would expect remedial students to be less likely to persist and complete a degree even in the absence of a remediation program. The key to understanding whether remedial programs work is to compare students with similar preparation levels.

The results are mixed when new data sources that compare similar students are used to study the effects of remediation on student outcomes. For example, Bettinger and Long (2009) examine the effects of remediation in Ohio and conclude that remedial students at Ohio colleges were more likely to persist in college and complete a bachelor's degree than students with similar test scores and backgrounds who were not required to take the courses. In contrast, focusing on Florida, Calcagno and Long (2008) suggest that remediation might promote early persistence in college, but it does not necessarily help community college students make long-term progress toward a degree. In Texas, Martorell and McFarlin (2011) find that remediation programs had little effect on persistence, degree completion, or a range of other educational outcomes. They also find no effect on labor-market earnings. It is important to note that much of this research focuses on students just on the margin of needing remedial courses (i.e., students who either need one remedial course or go directly into college-level work). Far less is known about the effectiveness of remediation in helping students with greater academic needs, though there is some suggestive evidence that more-intensive remediation can have positive effects (Boatman and Long 2010).

Even with an incomplete and mixed understanding of whether remediation works or how to improve it, this is a critical time in terms of remediation policy. In several states, including Indiana, South Carolina, and Tennessee, four-year institutions are prohibited from offering remedial education and are expected to make arrangements with community colleges to handle the remediation of students accepted for admission (Long and Boatman 2013). The shifting of remediation to only community colleges could have important repercussions on student success because community colleges receive far less in funding, and transfer rates to four-year institutions are low due to numerous structural and financial barriers (Long and Kurlaender 2009). In addition, there has been a general increase in admissions standards at many institutions to screen out less-prepared students. In some cases, academic deficiencies are so severe that colleges choose to expel new students rather than remediate them.⁷

Other states and institutions are considering how to control the costs of remediation. Some limit the percent of students who need remedial courses that can be accepted by an institution, while others limit the amount of time students

have to complete remediation or the number of times they can repeat a remedial course. For example, students who do not meet the minimum standards for college-level work within the University of Georgia system are placed into Learning Support classes. Students may only take one Learning Support class in English language arts and have only two attempts to pass the course. In terms of math, students can take up to two Learning Support classes and must pass these courses within three attempts, with no appeals (Georgia Board of Regents 2010). In 2012, at least seven states restricted or eliminated state funding for remedial courses at some of their four-year colleges, thereby forcing these institutions to fund remedial courses strictly through the use of tuition and fees (Smith 2012).

The policy decisions of where to allow remediation and whether to limit it in some way have huge implications for access to college-level training and for whether attending college is truly an avenue out of poverty. If the goal is to improve educational attainment and skill levels, as well as reduce government dependency, then states and institutions should carefully consider how to govern and provide remediation (Long 2012). As described below, better placement policies, improved services, and initiatives to reduce the need for remediation would significantly help address this major barrier to postsecondary education.

A New Approach

Given that remediation often acts as a major barrier—instead of as a gateway—to postsecondary education for many students, this memo offers three key recommendations for improving remediation services, and thus rates of college completion. States, university systems, school districts, and even the federal government could take up and encourage any or all of the following steps for improving the remediation system and for ultimately removing its need altogether.

IMPROVE PLACEMENT IN COLLEGE REMEDIATION CLASSES

Improving how students' academic preparation levels are assessed is the first step in better tailoring remediation supports for their needs. Rather than a single remediation placement exam, one alternative for determining a student's college readiness is to use multiple measures, including information about a student's high school GPA, courses taken, and/or years since high school graduation.

Currently, there is wide variation in what colleges use to assess students and what thresholds they use to determine who should be in remediation. Most colleges and universities use some

kind of standardized placement exam to assign students to remedial or developmental courses (Hughes and Scott-Clayton 2010).⁸ Typically, administrators make these designations based on hard cutoffs—students scoring below a given threshold are assigned to a remedial course. In fact, Parsad, Lewis, and Greene (2003) found that the two-year colleges where remediation is particularly concentrated almost exclusively use brief, standardized tests administered to new students just prior to registration to determine who should be placed into remediation. The strong reliance on a single exam is fraught with problems, however, and high-stakes placement exams are poor predictors of college readiness (Complete College America 2012). Moreover, misplacing students who do not actually need remediation into these courses can have a discouraging effect on college enrollment and persistence (Scott-Clayton and Rodriguez 2012).

There is increasing attention to the fact that the diagnostic value of remediation placement exams may be limited. Examining multiple contexts, researchers have found repeatedly that placement tests do not yield strong predictions of how students will perform in college. For example, Scott-Clayton (2012) examines data on over 42,000 first-time students at a large, urban, community college system to determine the predictive validity of one of the most commonly used remediation assessments. Her analysis suggests that one-quarter to one-third of students assigned to remedial classes based on test scores alone could have passed college-level classes with a grade of B or better.⁹ Looking at two large community college systems, Scott-Clayton, Crosta, and Belfield (2012) find that approximately one in four and one in three test takers in math and English, respectively, are severely misassigned under current test-based policies. They conclude that more students are incorrectly assigned into remediation than are incorrectly passed on to college-level coursework.

There is, however, an easy way to improve student placement: in addition to test scores, institutions could use information about a student's high school GPA, courses taken, and years since high school graduation. Scott-Clayton (2012) argues that incorporating these multiple measures could reduce what she defines as "severe misplacements" by 15 percent. This could have the added effect of reducing the remediation rate by 8 to 12 percentage points while still maintaining or increasing success rates in college-level courses.

Focusing on a different set of colleges, Scott-Clayton, Crosta, and Belfield (2012) come to a similar conclusion: using information from a student's high school transcript, either instead of or in addition to placement-test scores, would substantially reduce the number of students placed into courses incorrectly. Most importantly they conclude, "If institutions

took account of students' high school performance, they could remediate substantially fewer students without lowering success rates in college-level courses.”

Findings like this have increasingly led states and university systems to reevaluate their placement policies. Given the importance of high school preparation in predicting college success, it is not entirely surprising that taking into account information about high school course-taking and performance would improve placement decisions, and the potential benefits are large. The surprising fact is that high school grades and coursework are not already widely utilized as screening tools for many institutions (Belfield and Crosta 2012; Scott-Clayton 2012). This is a completely feasible policy, however, as demonstrated by the fact that some schools and systems already engage in the practice. The costs, beyond some additional staff attention, are predicted to be small, especially in comparison to the potential cost savings of avoiding unnecessary classes.

In addition to better placement, there are also calls to do a better job diagnosing students' specific needs to better match them with appropriate resources. The major remediation placement exams contain multiple parts that could be used to pinpoint the exact needs of students. Using the full value of these assessments to get a better sense of a student's specific weaknesses could result in improved matching of students with effective resources and supports, along the lines of those described in the second recommendation.

PROVIDE BETTER COLLEGE REMEDIATION SERVICES

The second key step is for states and institutions to collaborate on systems that provide better remediation services and supports. Currently, the primary effect of remediation appears to be diversionary: students simply take remedial courses instead of college-level courses, but the research suggests the remedial courses are doing little to improve student skills on average (Scott-Clayton and Rodriguez 2012). Given the growing number of students in need of remediation and the small, mixed results about whether students achieve academic success from these courses, an increasing number of institutions are beginning to rethink the ways that they offer and teach their remedial and developmental courses. I propose promoting the use of innovative pedagogies, technology, and support services to better equip students academically. Such methods could also help to streamline the pathway through remediation to increase the proportion of students who complete remedial courses and progress to higher-level academic work (Edgecombe 2011; Zachry and Schneider 2011).

Redesigning developmental courses could take a number of forms. Some states and institutions have focused on interventions that accelerate progress through remedial courses by mainstreaming students into college-level courses while also providing additional supports, such as tutoring, advising, or targeted sections outside of class. Other programs combine basic-skill courses with college-level coursework in a coordinated fashion. Still other programs have focused on using technology and/or targeted teaching modules to reduce the content students are required to complete. Such programs allow for more customization and personalization based on diagnostic assessments. Table 6-1 summarizes some of the major state and system efforts.

For example, the Community College of Baltimore County has the Accelerated Learning Program, which places students who placed into upper-level English developmental courses into the first college-level composition course instead. It then requires the student to co-enroll in a support section taught by the same instructor. Cho and colleagues (2012) find that the program significantly increased the rate of completion in the first and the second college-level composition classes within three years. Such programs do not appear to reduce the percent of students who pass their college-level courses. Edgecombe and colleagues (2012) find that students at another school who elected to use an accelerated pathway into college-level work had passage rates at or above students who first took developmental education courses.

Complete College America (2012) has also concluded that this is a promising approach; they suggest that students with few academic deficiencies should be placed in college-level courses with corequisite built-in supports such as just-in-time tutoring and required self-paced computer labs. In addition to the Community College of Baltimore County, other institutions that have initiated similar programs include the University of Maryland at College Park, Austin Peay State University in Tennessee, and Texas State University–San Marcos.

A program that combines basic-skills attainment with college-level coursework is the state of Washington's Integrated Basic Education and Skills Training (I-BEST) program. In the I-BEST program, remedial instructors and college-level faculty jointly teach courses that combine basic-skills attainment with college-level material. Using this approach, the students gain their basic skills through job training. Evaluations of the I-BEST program show higher rates of credit accumulation among recipients over time, as well as higher rates of persistence to the second year (Jenkins, Zeidenberg, and Kienzl 2009).

The Accelerated Study in Associate Programs (ASAP) at the City University of New York (CUNY) is another example

TABLE 6-1.

Possible Approaches to Redesigning Remediation

Definition	Examples	Effects
Mainstreaming		
Place students into college-level courses and provide additional supports (e.g., tutoring, special sections, and advising).	Accelerated Learning Program, Community College of Baltimore County (Maryland): This program allows students to take the first college-level composition course and co-enroll in a support session.	Participation in the program increased the completion rate of college-level composition classes within three years.
	Austin Peay State University (Tennessee): This program offers enhanced sections of two core college-level courses and linked them to Structured Learning Assistance workshops.	Students exposed to redesigned developmental courses had more positive outcomes than similar students not in remediation or in traditional remediation.
Linked remedial and college-level courses		
Combine remedial courses with college-level coursework in a coordinated fashion.	Integrated Basic Education and Skills Training Program (I-BEST) (State of Washington): Remedial instructors and college-level faculty jointly teach courses that combine basic-skills attainment with college-level material.	Recipients had higher rates of credit accumulation and higher rates of persistence to the second year.
	Accelerated Study in Associate Programs (ASAP), City University of New York (New York): ASAP links developmental courses with other college-level courses and provides supplemental supports to the classes; it requires students to attend full-time.	ASAP students were 66 percent more likely to complete an Associate degree.
	Learning Communities, Kingsborough Community College (New York): This program organizes students into cohorts that take paired remedial and college-level courses.	Students in the learning community moved more quickly through their developmental requirements, enrolled in and passed more courses, and earned more credits in their first semester.
Technology-enhanced learning and modularization		
Use assessments to determine students' specific needs and have targeted, short modules designed to address those needs.	Emporium Models: In this program, students move at their own pace through online tutorials with support from teaching assistants.	Descriptive trends suggest students are more likely to complete developmental and college-level courses.

Sources: Boatman 2012; Cho et al. 2012; Jenkins, Zeidenberg, and Kienzl 2009; Scrivener and Weiss 2013; Sommo et al. 2012; Twigg 2011.

of a promising program that links developmental courses with other college-level courses and provides supplemental supports to those classes. In their evaluation of the effects of ASAP on student outcomes, Scrivener and Weiss (2013) describe the program as requiring students to attend

college full-time and providing them with a rich array of supports for three years, including tuition waivers, free use of textbooks, block-scheduled classes, enhanced advising, career services, and free subway cards for transportation. Their evaluation found that after two years, ASAP increased

the proportion of developmental education students who completed an Associate degree by 5.7 percentage points, an increase of 66 percent.

Other redesign efforts focus on changing the traditional structure of a remediation course, which is typically a fifteen-week, semester-long lecture or seminar format in which a student takes one remedial course in a given subject before moving on to the next course in the sequence. Institutions are experimenting with incorporating learning technology such as self-directed learning labs and online-learning models, and with using high-tech classrooms (Epper and Baker 2009). These newer models of remediation attempt to better target students' academic needs and help them to move more quickly through their remedial courses.

Emporium models are an increasingly popular strategy that aims to help students complete their remediation faster. With this approach, students typically attend class in a computer lab and move at their own pace through online tutorials. Students not requiring much help might move through the material in a few weeks, while other students could take multiple semesters. Students have access to teaching assistants to help them as they complete the modules, and professors track their progress (Boatman 2014). Descriptive trends suggest students are more likely to complete developmental and college-level courses using this approach, and that they do so at a lower cost (Twigg 2011), but more research is needed.

Texas is currently engaged in such an effort. The Texas Higher Education Coordinating Board is working with the College Board to develop a diagnostic testing system that informs students not only of their placement, but also of what specifically they do not understand about the material. As profiled by Boatman (2014), students who receive the diagnostic will be required to take only the modules addressing their specific academic needs.

Many of the examples noted above demonstrate what could be done at the institutional level to redesign remediation programs, yet several reform efforts involve state policies and higher-education systems. For example, in 2007–8, the Tennessee Board of Regents implemented a redesign of remediation that initially involved six campuses. While the details of each institution's redesign effort differed, they focused on using learning technology, both in and out of the classroom, to enable students to work at their own pace and focus their attention specifically on the particular skills in which they were deficient. Boatman (2012) concludes that students exposed to these redesigned developmental mathematics courses had more positive outcomes than similar students from both nonredesign institutions and from prior cohorts at the same institutions.

Overall, these cases demonstrate that redesigning remediation programs can take many different forms. The costs of these innovations and redesigns are currently being documented, and they will depend on several factors, including the number of students served as well as the costs of instruction and supplemental supports. It will also be important to distinguish between the initial costs entailed to establish a new program, which might include investments in technology, and the long-run costs of having a new program. However, these costs must be compared to the benefits gained and to the current level of expenditure.

ADOPT MEASURES TO PREVENT THE NEED FOR REMEDIATION

The final recommendation is for high schools, higher-education institutions, and states to adopt measures with the aim of preventing the need for remediation altogether. Indeed, the need for remediation in college is closely tied to a student's high school curriculum. A study by the Ohio Board of Regents (2002) finds that students who had completed an academic core curriculum in high school were half as likely to need remediation in college compared to students without this core, and other research also emphasizes the importance of academic preparation in high school for success in college. Numerous studies link the courses students take in high school to their performance in higher education (Attewell and Domina 2008; Long, Conger, and Iatarola 2012). For example, Adelman (1999) tracked a cohort of students and found that their academic backgrounds, as measured by their high school curriculum, academic intensity, class rank, and GPA, were the most critical factors in determining college enrollment and success. In a later update, Adelman (2006) finds that students differ significantly in the types of courses they take by background. He concludes that a high school curriculum is becoming even more compelling in terms of its role in degree completion.

Completion of a high school core curriculum does not ensure that a student will avoid remediation in college, however. Upon enrolling in college, students are often surprised to learn they need to take such courses. Many students and families believe that meeting high school graduation requirements will adequately prepare them for college. But to avoid remedial college coursework, students often need to take a more-rigorous and more-demanding secondary school curriculum than that required by the district or state. Poor alignment between the K–12 and postsecondary education systems results in confusion about how and what students should do to be able to enter and succeed in college (Venezia, Kirst, and Antonio 2003).

The use of college placement exams as early diagnostic tools in high school is one promising policy aimed at better connecting student high school preparation with the requirements of postsecondary courses. For example, several states administer to younger students the same remediation placement test that is ordinarily given to college freshmen. Most often this testing is done in tenth or eleventh grade. Such tests are designed to improve college-preparatory information for high school students and to encourage those who fall short to take additional coursework in their senior year. With assistance from teachers, counselors, and parents, students can then determine what courses to take while they are still in high school in order to avoid college remediation.

Several states have experimented with early-testing policies, including California, Kentucky, North Carolina, Ohio, and Oklahoma.¹⁰ As shown by their examples, state-level early placement testing policies can take a variety of forms. The tests used range from standardized tests, (e.g., ACT's Plan) to exams closely resembling those that colleges give to entering freshmen (e.g., Computerized Adaptive Placement Assessment and Support Systems [COMPASS] and ACCUPLACER). The timing also varies among existing programs: some policies target high school juniors, while others test high school sophomores or even eighth graders (Long and Riley 2007).

The design and structure of a program, as well as the policies developed beyond the test to support the program's intentions of giving early diagnostic information, are key dimensions that could affect whether the policy has its intended impact. For instance, a program that is not mandatory and requires a high school or teacher to opt into the program to participate may not reach many of the students who would benefit. Moreover, research suggests that taking a test and receiving a score report falls short of providing many students with a clear signal. Students must be supported after the test with counseling to encourage additional course enrollments. It may even be necessary to develop new courses and pathways to fill gaps.

The experience of California with its Early Assessment Program (EAP) is informative for other states and higher-education systems. The California EAP aims to provide high school juniors with information about their academic readiness for coursework at California State University campuses. After the test in eleventh grade, interventions are developed for the student to pursue during twelfth grade. The EAP also includes professional development for teachers. An evaluation of the program found that participation in the EAP reduced a student's probability of needing remediation in college by 6.2 percentage points in English and 4.3 percentage points in math (Howell, Kurlaender, and Grodsky 2010). The

authors conclude that EAP increased students' academic preparation in high school but did not discourage poorly prepared students from applying to college. This research suggests the promise of early assessment programs in reducing the need for remediation.

Another state involved in a large-scale early testing initiative is Tennessee. In 2013, more than one hundred high schools in the state offered the Seamless Alignment and Integrated Learning Support program. This program identifies high school juniors who are on track to need college remediation, and allows them, while they are still in high school, to complete the same remedial math course they would eventually have needed to take in college (Boatman 2014).

The summer before college matriculation is another important time when students could try to address their academic needs and avoid remediation. Summer bridge programs can take many forms, from trying to enhance study skills to giving students the opportunity to begin their coursework. The California State University system has the Early Start policy, which requires incoming first-time freshmen who are not college-ready to begin their remediation during the summer before enrolling (Reed 2010). Similarly, the CUNY Start program has students spend the semester before beginning college taking a developmental course. Logue and Mogulesky (2013) finds that the program has been successful in helping students avoid remedial courses once enrolled in comparison to a similar group of students who did not enroll in the program.

Other institutions have targeted students during the summer before registration with tips and resources to help them prepare for the remediation placement exam. For example, Santa Monica College offers an online orientation to its placement test, which explains the content and format of the test and offers tips on how to best prepare. In a similar fashion, the Community College of Denver published a workbook for students to review the material on the ACCUPLACER placement exam and offered free tutoring sessions for interested students. Still another example is Guilford Technical Community College in North Carolina, which created an online course designed to prepare students to take or retake the COMPASS placement test (Quint et al. 2013).

Finally, additional ways to improve prevention include strengthening the links between K–12 and higher education. This could be done by better aligning curricula and including higher-education representatives in conversations about K–12 assessments. For instance, bringing together high school English teachers with college English professors would foster smoother transitions for students. Links between the systems could also be built into K–12 accountability systems and report

cards. As many districts have already started to do, college enrollment rates of recent graduates could be publicized. Taking this a step farther, statistics on the placement of recent high school graduates into college remediation would be a useful way to judge secondary-school rigor and success in preparing students for college-level material.

COSTS AND BENEFITS

Strengthened remedial education has the potential to improve the effectiveness of education spending. At the high school level, improved diagnostic tests can allow schools to tailor educational curricula before students even attend college, significantly reducing the need for college-level remediation. For example, as noted above, California's EAP reduced a student's probability of needing remediation into 6.2 percentage points in English and 4.3 percentage points in math. In addition, improved placement into college-level remedial courses can save both student and college spending on remediation. Academic evidence suggests that a large share—between one-quarter and one-third—of remedial students are misassigned to remedial courses; assigning these students to more-appropriate courses will lower educational costs and allow students to complete courses that better improve their abilities and knowledge.

Better administration of remedial courses can have important impacts on educational and labor-market outcomes. Interventions aimed at improving supports for students in remedial courses—such as the state of Washington's I-BEST program or CUNY's ASAP program—can lead to improved college persistence and higher graduation rates. These outcomes are particularly promising for low-income and minority students who exhibit low rates of college completion. Higher rates of college completion can then translate into improved labor-market outcomes, namely higher rates of employment and elevated earnings.

Depending on the nature of the intervention, better remedial education may temporarily raise spending in the implementation phase. However, even though redesigned courses and improved remedial supports will incur initial outlays, the short-term costs of starting a new program should be measured against long-term cost savings. For example, programs that reduce the need for remedial education can lead to lower overall spending over time. In addition, programs that require an initial capital investment—such as technology-based programs that require new computers and programming—will incur costs early in the development process, but these costs are expected to decline over time.

In sum, improved remediation may lead to slightly higher educational outlays in the short run, but will likely lead to

cost savings for students, institutions, and taxpayers in the long run. When considering the social benefits of college education, the rewards to improved remediation seem likely to be worth the initial investment.

Questions and Concerns

Is remediation worthwhile at all? If remediation is so expensive, should we just get rid of it?

To eliminate remediation would be counterproductive to the goal of increasing degree attainment. As noted by Cloud (2002), doing so would “effectively end the American experiment with mass postsecondary education.” The low levels of academic preparation inherited by higher-education systems are certainly a challenge, but solutions need to be found to address the problem if the country is going to succeed in increasing educational attainment and reducing government dependency, especially among low-income individuals who might otherwise be in poverty and lack the skills necessary for advancement. Moreover, research in recent years highlights promising practices that would improve student preparation and outcomes, as well as reduce unnecessary costs.

Why not just focus efforts on improving the K–12 education system?

Improving the K–12 system would have benefits, but the problems facing high schools are numerous: insufficient academic rigor, a lack of alignment with postsecondary institutions, and a limited supply of advanced courses at some schools. Even if these problems were solved, the country would still have to contend with addressing the needs of older, nontraditional students, who make up approximately 40 percent of college students today. Moreover, students sometimes make poor choices about their courses, and while improving early information about college preparedness levels would help (as recommended above), some students will not decide that they need a college education until after high school. Therefore, colleges and universities need to improve their efforts to address the needs of these students. With remediation rates being as high as 70 percent at some colleges, focusing on K–12 alone will not solve the problem.

Conclusion

Remediation plays an increasingly important role in the lives of students and the colleges and universities they attend. Traditional remedial courses are costly in terms of time and resources, however, and fail to improve the chances that students will be successful in college and graduate with

a credential. As a result, remediation is a major barrier to postsecondary-level training for many students, and currently the system is not designed to help students get over that hurdle. While some states debate how to manage or limit remediation, most of the current policy efforts do not focus on how to improve programs or help students avoid remediation altogether. Improving the placement process, redesigning the courses and supports, and adopting policies to help students avoid remediation, however, are three meaningful ways to improve student outcomes and increase their educational attainment. Improving placement policies by incorporating high school course-taking and performance information would reduce the chance that students are assigned to remediation incorrectly and would help schools to better target services. In addition, redesigning remediation programs with innovative pedagogies and support services in order to streamline the pathway through remediation and enhance student progress would reduce the time needed to complete the courses and improve rates of success. Finally, we could reduce the need

for remediation by better aligning curricula and having high school students take college readiness assessments earlier so that they can make better decisions about the courses they take before entering college.

Reforming remediation and better supporting the students who need it will be essential if the country is to improve educational attainment levels. Currently, 40 percent of first-year students are placed into remediation, and most do not complete the courses or persist until they earn a credential. As the national nonprofit Complete College America highlights in its 2012 report, “Remediation: Higher Education’s Bridge to Nowhere,” the “broken remedial bridge is travelled by some 1.7 million beginning students each year, most of whom will not reach their destination—graduation.” Now is the time for the federal government, states, colleges, and high schools to consider the growing number of promising practices and additional supports that could improve students’ chances for educational success.

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Endnotes

1. Low income refers to the bottom 20 percent of all family incomes, and high income refers to the top 20 percent.
2. The terms “remedial” and “developmental” are often used interchangeably in the literature because some states favor one term over the other. In this paper, both are meant to refer to the courses and services offered to postsecondary students below college level, including basic-skills training and nontraditional coursework.
3. The question as posed by Complete College America (2012) is, “Can an ‘open access’ college be truly open access if it denies so many access to its college-level courses?”
4. In 2004, the data suggest only 27 percent of high school seniors had completed high-level academic coursework, defined as four years of English, three years of mathematics (including at least one year of a course higher than Algebra II), three years of science, three years of social studies, and two years of a single non-English language (NCES 2010).
5. Greene and Foster (2003) define being minimally college ready as (1) graduating from high school after (2) having taken four years of English, three years of math, and two years each of science, social science, and foreign language; and (3) demonstrating basic literacy skills by scoring at least 265 on the reading NAEP.
6. Those authors’ estimate is based on the number of first-time degree-seeking fall enrollees and on assumptions about the percent placed in remediation, the number of remedial courses they will take, and the costs of providing a remedial course.
7. For example, according to Rebecca Trounson writing in the Los Angeles Times on January 31, 2002 (“Cal State Ouster Rate Rises Slightly”), in the fall of 2001, a California State University campus “kicked out more than 2,200 students—nearly 7 percent of the freshman class—for failing to master basic English and math skills.”
8. The most widely used placement exams are the Computerized Adaptive Placement Assessment and Support Systems (COMPASS) and the Assessment of Skills for Successful Entry and Transfer, each published by ACT, Inc., as well as the ACCUPLACER, published by the College Board.
9. Moreover, she finds that the placement exam varies in how well it predicts success in math versus English, and it does a better job predicting who is likely to succeed rather than who is likely to fail.
10. For example, see the California Early Assessment Program, Kentucky Early Mathematics Testing Program, North Carolina Early Mathematics Placement Testing Program, Oklahoma Educational Planning and Assessment System, and the Ohio Early Mathematics Placement Testing.

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