

# Completion Reforms That Work: How Leading Colleges Are Improving the Attainment of High-Value Degrees

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## Executive Summary

In this report, Mark Schneider and Kim Clark evaluate institution-level practices aimed at improving college completion rates. Through their research, they identified more than 600 “failure factories”—schools that graduate less than a third of their students within six years, producing alumni who often struggle in the job market. But they also identify notable “success factories”—schools that graduate an unusually high percentage of their students, launching them into promising careers. Impressive completion rates are not limited to any one type of college: Across all sectors, there are prominent examples of innovative colleges that graduate the vast majority of their students. In many cases, they achieve impressive results despite the typical challenges that might commonly be associated with their sector.

Most importantly, they review the details of five reforms that appear to enable such success. They emphasize programs with robust independent research that validate their

effectiveness and other institutional policies that demonstrate some initial success in improving outcomes for undergraduates. They review how successful programs might be replicated, along with the likely costs and hurdles the programs will experience if policies designed to expand them are not implemented with caution.

While this report focuses mostly on four-year institutions, many of the highlighted reforms can be implemented at any type of postsecondary institution if properly tailored to a school's and student body's particular needs and characteristics. With such large variation among college completion rates across the country, this report offers a worthwhile look at some specific practices that are working at the institutional level, examines how much we know about the success of those programs, and evaluates whether policymakers can assist in scaling up ones that work.

— *Rick Hess and Lanae Erickson Hatalsky*

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Each of the more than 4,500 degree-awarding colleges in the United States claims to provide students with the support they need to succeed in school and life.

Of course, defining just what “success” means is both highly personal and highly controversial. Certainly, higher education is not simply job training. But surveys consistently show that career and financial advantages are among the top expectations of college students <sup>1</sup> and the political leaders who determine the level of taxpayer support for higher education. In today's labor market, most new jobs require some type of postsecondary education. <sup>2</sup> In fact, the vast majority of the best paying jobs are increasingly reserved for those with bachelor's degrees. <sup>3</sup>

Given the current difficulty in measuring desirable student outcomes, such as student growth in “critical thinking skills” or how much students actually learned in college, both public and private efforts to clarify the contribution of colleges to student success have usually focused on graduates' ability to

land jobs with high wages and pay back their student loans. Milestones on the way to those goals, such as attainment of a bachelor's degree and even year-to-year retention rates, are useful (and easier to gather) measures, although they reflect the *process* of getting through postsecondary education rather than successful student outcomes.

Regrettably, whether we focus on process or outcome measures, the data should humble anyone hoping to raise Americans' educational and skill levels. Bridget Terry Long notes that completion rates at some types of institutions—especially public and private not-for-profit universities—have risen over the past decade.<sup>4</sup> But declines at other types of institutions, such as for-profits, have meant a less dramatic improvement in the overall graduation rate. Integrated Postsecondary Education Data System (IPEDS) data show that 59.6 percent of freshmen entering four-year colleges in 2008 earned a degree from their initial institutions within six years, up from 55.4 percent of 1996's freshmen.<sup>5</sup> That level remains in the range seen in previous generations, as described by historian John Thelin. The nation's college graduation rate has remained remarkably stable at about 60 percent for generations, Thelin says.<sup>6</sup> The improved outcome measures available today show that hundreds of American colleges are failing many of their students as well as the taxpayers who subsidize higher education. For example, IPEDS data show that almost 600 of the nation's approximately 3,000 four-year campuses report that less than one-third of their freshmen earned a four-year bachelor's degree within six years.

The Department of Education's College Scorecard data show that a majority of the former freshmen at more than 200 of the colleges that exceed that low bar are earning annual salaries below \$25,000 in their sixth year after starting their studies—which is less than the average pay of those with only a high school education.<sup>7</sup> While the schools on this list are varied, most are open access or nearly open access, serving disadvantaged and often academically unprepared students. More than 50 of them are for-profit institutions.

Nearly 40 are institutions focused on either art or religion and so, presumably, serve a population less interested in financial returns. A disproportionate share—more than 40 percent—are in the South, where wages tend to be lower than in other regions. Florida alone accounts for 35 of the colleges.

Still, many of these colleges are failure factories sucking up billions of dollars from students and taxpayers without contributing much to their students' financial stability or careers. In some cases, students graduate with debt but are no better off in the labor market than before enrollment. In contrast, hundreds of other colleges could be described as success incubators, since most of their students go on to land good jobs and live financially stable lives.

How are they doing this? Can their success be replicated to give more Americans the education and credentials they need to thrive in the 21st century?

Despite the importance of higher education and the hundreds of billions of dollars in public and private spending on it every year, we are only now beginning to create a “playbook” of institution-level interventions that just might help the nation and many more students reach an increasingly important goal: a high-value college degree that leads to family-sustaining wages over the long run.

## **Some Initial Lessons Learned**

From extensive interviews with staff and leaders of exemplary programs and with independent researchers who have examined the most successful higher education institutions, we distinguished four themes.

### **There Is No “Plug and Play” Solution**

Simple, affordable, replicable, and scalable improvements that significantly improve success rates remain elusive. Programs or reforms that improved student success in one college all too often fail, often spectacularly and expensively, at another college because of some unique characteristics of the first school's student body or particular style of

implementation. Something as simple as failing to adapt the delivery of encouraging messages to the student body's academic schedule or electronic messaging preferences (for example, text versus email) can result in widely differing impacts. "Everything depends on the quality of the implementation," says Loralyn Taylor, director of analytics for university student success initiatives at Ohio University.<sup>8</sup>

## **Most Programs Help Only as Long as They Are Active**

Many colleges have found initial, immediate improvements in retention from programs such as summer bridge experiences for incoming freshmen or yearlong learning communities. However, once those programs end, longitudinal data find little to no significant impact on the later success of the group as a whole. "Most of our studies find shorter-term programs have effects over the short term," says Alexander Mayer, deputy director for postsecondary education at MDRC. "They are very often effective while they are in place. But the effects tend not to continue or grow in the long term or after the program has stopped."<sup>9</sup>

## **Holistic Beats Piecemeal**

The colleges reporting the most success in producing high-value degrees tend to provide holistic, wraparound support for students. "The evidence suggests that holistic and proactive efforts that provide financial aid with other advising and supports are more likely to help students complete college than the sum of their programmatic parts," says Lindsay Page, an assistant professor of research methodology at the University of Pittsburgh School of Education who has studied several completion reform initiatives.<sup>10</sup> Regrettably, comprehensive efforts tend to require large upfront investments and are difficult to implement in the balkanized environments of many colleges in which academic departments, student affairs offices, and career counseling often cannot or will not find the will to coordinate their efforts. Indeed, some administrators may

find that some of their professional or institutional goals, such as addressing a short-term budget shortfall or quickly increasing the exclusivity of a department, may directly conflict with such long-term investments.

## **Investing in Access and Success Saves Money**

Short-term budget concerns have caused many colleges to stint on providing important services such as financial aid, tutoring, and advising. But when the horizon is lengthened from the cost per year to examine, for example, the cost of each degree awarded, many of these programs result in lower costs for students, colleges, and taxpayers.

## **Five Promising Reforms**

Five practices used by leading colleges are improving the attainment of high-value college degrees. We focus mainly on bachelor's degrees because of their generally higher value in the job market. Nevertheless, most if not all the reforms can be adopted—if tailored to the schools' and student body's particular needs and characteristics—to improve outcomes of students pursuing any type of postsecondary education. We examine two college-wide reforms and three more targeted programs aimed at reducing financial, academic, and social and cultural barriers to completion.

### **Practice 1: Provide more seats for historically disadvantaged students at colleges with track records of producing successful graduates**

There is no secret formula to high graduation rates and high student success. The wealthiest colleges have been doing it for decades: taking in well-qualified students, making sure they can afford school, and providing them with top-notch professors and lots of attention and support.

For example, Table 1 shows the outcomes of 10 of the nation's richest, best-staffed selective colleges with generous need-based aid. With this well-honed formula, perhaps the

question is not how do these universities achieve graduation rates above 90 percent, but how did they lose even 5–10 percent of their students.

**Table 1. Outcomes of 10 Selective US Colleges with Generous Need-Based Aid**

Institution	Net Price for Students from Families Earning <\$30k	Student-Faculty Ratio	ACT Bottom 25th Cutoff Composite Score (30 = 94th Percentile)	2016 Graduation Rate	% of Former Freshmen Earning >\$25k Six Years After Start	% of Pell Recipients Repaying Loans Within Five Years
Stanford University	\$1,630	10	31	94%	87%	86%
Williams College	\$1,910	6	31	94%	68%	81%
University of Chicago	\$2,551	6	32	94%	83%	84%
Harvard University	\$3,294	7	32	97%	88%	54%
Vanderbilt University	\$3,482	8	32	92%	82%	82%
Duke University	\$4,728	7	31	95%	89%	87%
University of Pennsylvania	\$4,939	6	32	95%	90%	85%
Yale University	\$5,171	6	32	98%	83%	85%
Rice University	\$5,398	6	32	93%	80%	84%
Vassar College	\$5,585	8	30	91%	67%	89%

Note: This table shows 10 selective colleges with the lowest net prices for low-income students and with below-average student-faculty ratios for which earnings and Pell Grant recipient student loan payback data are available.  
Source: Authors' calculations based on Integrated Postsecondary Education Data System and the College Scorecard.

Clearly, raising colleges from 30 percent graduation rates to the more than 90 percent graduation rates of these 10 rich campuses is not realistic in the short run—and maybe in any run. But efforts are popping up across the nation that may increase the number of disadvantaged students who earn high-value college degrees from these kinds of well-resourced schools.

## Example

A handful of private liberal arts colleges— such as Amherst, Franklin & Marshall, and Vassar— are demonstrating that elite schools can successfully adjust their models to provide more access to previously overlooked populations.<sup>11</sup> By changing recruiting and admissions practices, Vassar has raised the percentage of its student body eligible for federal Pell Grants (which typically go to students from families earning less than \$50,000 a year) from 7 percent in 2006 to 24 percent today. As Jason Delisle has noted, while Pell Grant data are not a perfect indicator of socioeconomic diversity, they are the only publicly available, consistently collected measure available for each college.<sup>12</sup>

## Outcomes

The graduation rates for Pell-eligible and minority students at Amherst, Franklin & Marshall, and Vassar are above 80 percent. Research by Stacy Dale and Alan Krueger shows that historically disadvantaged students who graduate from schools characterized as “selective” or “highly selective” by Barron’s *Profiles of American Colleges* enjoy an average earnings advantage of about 12 percent compared to peers who did not attend such selective colleges.<sup>13</sup>

## **Potential Impact**

A group of almost 100 selective colleges have recently joined an effort called the American Talent Initiative and have promised to collectively create opportunities for an additional 50,000 low-income students by 2025.<sup>14</sup>

## **Cost**

The costs to an institution of providing such high-quality courses and services to a very low-income student can exceed \$90,000. Amherst estimates the total cost of a year’s instruction at \$99,000.<sup>15</sup> Vassar’s annual spending on institutional grants has risen from \$26 million to almost \$69 million in the past decade.<sup>16</sup>

## **Implementation Challenges**

Although many college officials complain about the difficulty of finding low-income students who can succeed in demanding academic environments, leaders at colleges such as Vassar and Franklin & Marshall say they have had success recruiting through organizations such as the Posse Foundation and QuestBridge and building alliances with high-performing networks of charter schools. The colleges’ administrators say the bigger challenge is funding and supporting the students once they enroll. Although committed schools such as Amherst, Vassar, and Franklin & Marshall provide the necessary funding and advising, some college members of the American Talent Initiative have track records of failing to support those who do not fit the school’s typical student profile. African American students at predominantly white schools—such as Juniata College,



Lawrence University, and the University of Dayton—have significantly higher dropout rates than do white students, for example. Officials at those schools say they are developing programs to address the achievement gaps.

The need for extra financial aid and support raises questions about the financial sustainability of these efforts.

Dramatically higher aid expenses required Vassar to cut back on staffing and some services, which, as Malcolm Gladwell pointed out in his Revisionist History podcast, could disadvantage such schools in competing for the smartest and/or highest-paying students.<sup>17</sup> Finally, even if the Talent Initiative's noble-sounding effort succeeds, the elite schools promise to enroll an additional 50,000 students—which translates to just 2 percent of the current undergraduate student body. Elite schools simply do not have the capacity to significantly increase the number of college graduates.

## **Practice 2: Provide comprehensive support to all types of students, especially those facing financial or academic challenges**

To increase opportunities and success for significant numbers of students, changes must be made at the hundreds of regional campuses and nonselective institutions that serve the bulk of the nation's student body.

### **Example**

Experiments at the City University of New York (CUNY) show how intensive, holistic support can dramatically improve the attainment of large numbers of high-quality degrees for students who did not ace high school. Furthermore, CUNY's investments, although initially expensive, are lowering costs per degree for both CUNY and its students.

Since 1965, CUNY's Search for Education, Elevation, and Knowledge (SEEK) program has enrolled low-income students whose academic records fell just below regular admissions standards at the system's four-year

campuses.<sup>18</sup> About 1,600 SEEK students are admitted each year to a CUNY senior college. They are provided with extra support with financial aid, academics, and advising. Unlike regular CUNY students, SEEK participants are guaranteed enough aid to fully cover tuition, books, and transportation expenses. SEEK participants are also required to participate in a summer prep program and are provided extensive additional tutoring to help them catch up to the regularly admitted students. In addition, they are assigned to dedicated counselors who have comparatively low caseloads of fewer than 200 students and who stick with the student throughout his or her college career. These advisers provide assistance on everything from time management to choice of major.

CUNY has started expanding a similar wraparound program, the Accelerated Study in Associate Programs (ASAP), which was originally designed for two-year colleges, to some four-year campuses. These two CUNY programs—SEEK, which started at the four-year campuses, and ASAP, which started at the community colleges—are among the most-researched efforts to raise the educational achievement level of disadvantaged students.

## **Outcomes**

SEEK alumni, on average, earn approximately \$4,000 more per year than similarly qualified students who could not take advantage of the program because their family's incomes were above the SEEK cutoff, according to research by the CLIMB Initiative.<sup>19</sup>

In contrast to the far too many overhyped interventions with little supporting evidence, ASAP has been subjected to rigorous evaluation showing that it increases student success. Indeed, MDRC, the research firm that is evaluating ASAP, has called it “one of the most effective programs we have ever studied.” In a randomized controlled trial conducted by MDRC, 40 percent of ASAP participants, all of whom needed at least some remedial preparation for college, earned an

associate degree within three years—almost twice the rate of similarly qualified non-ASAP participants.<sup>20</sup>

## **Potential Impact**

In all, CUNY expects to enroll at least 25,000 students in its wraparound programs by the 2018–19 academic year. Similar programs have started or are in the planning stages at five additional colleges in California, Ohio, and New York. The early indicators from the replication efforts in Ohio appear to be positive.<sup>21</sup> For example, students in the pilot program are earning more credits than regular students. But it will take several years to determine whether the replication also increases degree attainment and improves long-term student outcomes.

## **Cost**

The additional financial aid, advising, and tutoring for SEEK students costs an extra \$2,700 per year according to CUNY. ASAP, which offers more comprehensive and personalized academic advising and support, had cost an estimated \$5,000 more per student per year in the early years. However, as the size of the program has grown, the per-student cost has dropped to \$3,400. Because of the dramatic impact on completion, CUNY's cost per degree for ASAP students is at least \$6,500 less than it is for non-ASAP students.<sup>22</sup>

The savings for the students are also substantial. The Center for Benefit-Cost Studies of Education (CBCSE) estimated in 2012 that earning an associate degree at CUNY costs the average student about \$20,000.<sup>23</sup> But the additional aid and faster completion, which reduces opportunity costs, meant an associate degree costs ASAP students only about \$13,000.

CBCSE also found that the initial investments paid long-term benefits to taxpayers in the form of reduced other expenditures and higher tax collections: “For each dollar of investment in ASAP by taxpayers, the return was \$3 to \$4.”<sup>24</sup>

## **Implementation Challenges**

Simultaneously upgrading financial aid, advising programs, and tutoring programs—and making them work together seamlessly—is difficult and crucial. We will not have any insights into how easily ASAP can be replicated until the results from Ohio and other sites are in hand.

### **Practice 3: Provide completion (or emergency) grants to juniors and seniors who need a little additional financial help reaching the finish line**

Cost is the most commonly cited reason for students failing to enroll in college or dropping out.<sup>25</sup> Financial aid simply has not kept up with rising tuition and other costs. The College Board's Trends in Pricing database shows that published tuition and fees for public four-year institutions rose by 31 percent *above the rate of inflation* between fall 2007 and fall 2017.<sup>26</sup> The latest data available, the US Department of Education's National Postsecondary Aid Study (NPSAS) from 2012, show that the average college student who applied for aid received \$7,800 less in grants and scholarships than the federal government calculated they needed to afford college.<sup>27</sup> The historical NPSAS data indicate that the "unmet need" gap rose almost 50 percent—even after adjusting for inflation since the 2003–04 academic year.<sup>28</sup>

Predictably, research finds that providing significant additional grant aid to those who need it can increase college completion.<sup>29</sup> Of course, filling those gaps would be prohibitively expensive for most colleges.

Low-cost solutions, such as text-message reminders to students to apply for aid, have had mixed success. One study found that such e-nudges helped community college students receive more funding that helped more of them stay in school, but that similar messages had no effect on students at four-year colleges.<sup>30</sup> Slightly higher-cost assistance, such as providing professional help to fill out federal aid applications, has been shown to increase higher education enrollment, persistence, and achievement.<sup>31</sup>

Some colleges are also finding that upfront investments in relatively small, well-timed additional grants can both improve graduation rates and the school's bottom line.

## **Example**

Since 2011, Georgia State University (GSU) has made more than 10,000 automatic completion grants to juniors and seniors who could not register for the next semester because of unpaid bills, have unmet financial need, and are making satisfactory academic progress toward graduation (i.e., they have a grade point average of at least 2.0). Panther Retention Grants can total as much as \$2,000 but average \$900.<sup>32</sup> Students cannot apply for a retention grant. Instead, GSU staff flags the account of any student who is about to be dropped for nonpayment. The school checks the student's financial aid eligibility to credit any available aid against the debt. Once the aid and any student payments are credited, the school cancels any outstanding balance. Recipients of the grants must meet with a school financial counselor to plan how to pay for the rest of their education.

In a related experiment, a group of 16 public two-year technical colleges in Wisconsin have tested "emergency" grants—typically awards of no more than \$1,000—to address students' unforeseen emergencies, such as car breakdowns and health bills.<sup>33</sup>

## **Outcomes**

Eighty-two percent of GSU seniors who received retention grants have graduated or were still enrolled one year after receiving the grant, GSU reports. In 2017, 1,300 bachelor's degrees—slightly more than one quarter of all GSU's bachelor's degrees awarded that year—went to recipients of retention grants, according to Timothy Renick, GSU's vice provost and vice president for enrollment management and student success. That is one reason GSU increased the number of students it graduated from 3,900 in 2010 to 4,700 in 2016.<sup>34</sup> The Wisconsin community colleges reported that nearly three-quarters of the emergency grant recipients

had graduated or remained enrolled in the 2012–15 period of the pilot test.

## **Potential Impact**

In addition to Georgia State, 10 additional members of the University Innovation Alliance have launched a test of completion grants.<sup>35</sup> Dozens of other colleges are offering or testing various kinds of emergency grants, according to a survey by the National Association of Student Personnel Administrators.<sup>36</sup>

## **Costs**

In the 2016–17 academic year, GSU gave out 2,000 retention grants for a total expenditure of \$1.8 million. Renick says the average size of the grant used to pay unpaid bills preventing students from registering was \$900. According to Renick, research indicates that 70 percent of students who leave because of unpaid bills never return. So GSU estimates that forgiving one semester's unpaid bills leads to revenue gains if the student continues on and pays tuition in future semesters. The Wisconsin community colleges spent \$1.6 million on administering and awarding emergency grants averaging about \$555 apiece to 2,654 students between 2012 and 2015.<sup>37</sup> In short, small targeted financial aid can be highly productive.

## **Implementation Challenges**

Colleges awarding emergency grants have found the programs work best if staff also spend time and resources fact-checking requests to discourage fraud and gaming. In addition, the Great Lakes Higher Education Corporation, which has funded new emergency grant programs at 63 additional colleges, says administrators of the pilot programs learned that it is safer to limit payments directly to vendors rather than paying students. Finally, Renick urges colleges considering completion grants to ignore any temptation to replace the grants with loans: The hassle of collecting on such small-dollar debts would likely mean loans would end up costing more than the simpler grants.

## **Practice 4: Use new data-gathering and analysis techniques to provide better and more useful guidance to students**

Data mining has been making the private sector more efficient for years. Corporate data collection and analysis can help navigate around traffic jams and match a person with compatible dates. They also ensure that Walmart is well stocked with snow shovels just before a blizzard. Such techniques have only recently been adopted by a few leading colleges and universities to help students find their way through the registrar's office, match them with a compatible major, or make sure they have the courses they need when they need them. A few colleges are finding that big data, smartly applied, can dramatically improve their students' lives.

### **Example**

In 2010, California State University, Fullerton, had a six-year graduation rate of just 51 percent, was reeling from budget cuts, and had just received a report from its accreditor that, although generally positive, questioned whether the school provided “consistently adequate and accurate advising that would ensure that all students understand their requirements toward their major and toward graduation.”<sup>38</sup> Little wonder: The school had only about 10 full-time dedicated advisers (in addition to the faculty who also had advising duties) for its approximately 36,000 students.

College leaders, in conjunction with students, developed a plan to address the problems. Starting in the fall of 2014, students would pay an extra Student Success Initiative Fee of \$362 per year (raising the total average cost of tuition and fees by almost 6 percent to \$6,315) that would fund, among other things, a “retention specialist” for freshmen and sophomores and a “graduation specialist” for juniors and seniors. These new advisers along with new career advisers and other staff were located in one-stop “success centers” in each of the university's divisions (its name for colleges).

Although these new advisers still had huge caseloads, they apparently dramatically influenced students and Fullerton's success through some simple data analysis and outreach. They contacted and offered to assist every continuing student who had not yet registered for classes each summer and winter break. By intervening proactively, the specialists could eliminate bureaucratic, academic, and financial barriers that were impeding students by helping them, for example, to get seats in bottleneck classes or file necessary paperwork with the financial aid office.

## **Outcomes**

While there has been no rigorous independent randomized controlled trial of Fullerton's reform efforts, the school's graduation rate rose in the years after the new advisers were hired: It jumped 6 percentage points—from 56 percent to 62 percent within the first two years. The number of bachelor's degrees awarded also rose to 8,050 in 2016, an increase of 600 from 2013. Fullerton's graduation specialists (who help juniors and seniors) report that in 2014–15, the initial year of implementation, they prevented 2,488 deferred graduations. For the 2015–16 year, they reported assisting 2,560 students toward speedier graduation.

## **Potential Impact**

The potential impact of data-driven proactive interventions on higher education is vast. Hundreds of other colleges—of all types—are using data to analyze and improve college services. The University Innovation Alliance of 11 large public universities reports that empowering advisers with data tools to alert them when students shows signs of struggling—skipping classes, for example—can improve initial retention rates by 5 percent.<sup>39</sup> At Strayer University, for example, data are used to encourage staff and instructors to respond to student emailed queries in a timely manner, which school officials say is raising student satisfaction and retention.

## **Costs**



For 2016–17, Fullerton budgeted \$2.2 million for academic advising. It estimated that every additional adviser costs about \$51,000 in salary and benefits.<sup>40</sup> Data analysis vendors charge varying prices depending on the level of services. Large public colleges report paying anywhere from \$10,000 to more than \$200,000 per year for consultants to build and maintain a data analysis and reporting system.

## **Implementation Challenges**

There are growing concerns about the privacy implications of big data analysis inside schools. Student and financial aid privacy rules appear to prevent some data sharing.<sup>41</sup> Faculty, perhaps jaded by the failure of many previous reform efforts, can be reluctant to adopt yet another technology platform. And some investments in high-cost data and adviser systems have failed. For example, the University of Akron spent more than \$800,000 on a data-driven advising program that was dropped after just one year.<sup>42</sup>

## **Practice 5: Use evidence-based teaching methods to improve instruction**

Simply having a postsecondary degree is an advantage in the job market. But new finer-grained data are showing *which* degrees— especially which skills students master—can have a much larger impact on their later success.<sup>43</sup> To increase the number of high-value degrees, it is crucial to improve the quality of instruction. And a growing body of research is showing just how to do this. Besides student scores on tests, researchers are using data on attendance, retention, and success in more advanced classes to isolate the instructional practices that inspire and advance students.

For science and math classes, for example, Nobel Prize–winning physicist Carl Wieman is leading an effort to replace time-honored, but suboptimal on average, lectures with more powerful learning environments, such as “deliberative practice” sessions in which groups of students work together in class to solve problems. Instead of an hour-long lecture, an

instructor starts the class by posing a question. The students work in teams to answer it in class. The instructor then follows up with instruction that reflects on what the students got right or wrong and poses a new question based on the next concept the instructor wishes to cover.<sup>44</sup> Such methods, even when applied by inexperienced graduate students, increased attendance by approximately 20 percentage points and slightly improved midterm test scores.<sup>45</sup>

Academic freedom, budget constraints, tradition, and entropy blocked widespread adoption of these commonsense improvements to education, but Wieman sees a few signs of hope that significant numbers of students will soon benefit from improved instruction. The American Association of Universities (AAU) has seed-funded science-teaching reform efforts at 12 universities, from MIT to Iowa State. And the AAU is pushing all its member institutions to improve their instruction by adopting deliberative practice and other active learning strategies and to make teaching quality an important part of tenure decisions: “Failing to implement evidence-based teaching practices in the classroom must be viewed as irresponsible, an abrogation of fulfilling our collective mission,” warned AAU President Mary Sue Coleman.<sup>46</sup>

Evidence-based reforms to remedial education, on the other hand, have gained much more traction and have proved to significantly affect students, in part because of the poor record of standard remedial programs.<sup>47</sup> Approximately half of students who enroll in college score below college level in writing or math skills.<sup>48</sup> Yet 80 percent of those who take remedial math courses fail to pass a college-level math class within three years.

Of course, a broader and better solution would be to improve K–12 education to make sure that all students enter college well prepared. But for colleges dealing with the immediate reality of underqualified undergraduates, reforming remedial courses and curriculum holds the promise of removing at

least one of the biggest barriers to educational progress. The reforms that have had the biggest positive impact are compressing courses to speed students through remediation, offering more relevant courses such as statistics instead of algebra, and providing extra support through “co-requirements,” in which accelerated remedial courses are paired with required extra tutoring or study skills classes.

## **Example**

Several colleges in Texas, including the University of Texas (UT) at Arlington, have replaced traditional remedial math classes with alternatives such as Quantway and Statway.<sup>49</sup> These replacement courses, developed by the Carnegie Foundation for the Advancement of Teaching, provide students with math skills that are more relevant to their majors.

## **Outcomes**

The success rates for UT Arlington’s students in all gateway mathematics courses rose between 5 and 16 percentage points after the 2011 implementation of the new courses, according to the Charles A. Dana Center at the University of Texas at Austin.<sup>50</sup>

## **Potential Impact**

Because half of all freshmen need at least some remediation, the potential impact of improving these courses is vast. And a growing number of colleges are adopting reforms, including public colleges in Tennessee, Texas, and New York.<sup>51</sup> A new California law is now sparking the majority of that state’s public colleges to offer corequisite options that allow academically unprepared students to take credit-bearing classes immediately, as long as they are also benefiting from tutoring or other supports.

## **Costs**

SUNY budgeted \$1.8 million to train 60 instructors in the Quantway and Statway replacement courses.<sup>52</sup> SUNY estimated those instructors would teach approximately

20,000 students per year, at an estimated upfront investment of just \$1.50 per student.

New corequisite programs in Tennessee cost about \$10,000 to set up initially. According to research by the Community College Research Center, the ongoing higher costs ranged from \$30 to \$100 per student due to the required additional staffing and support.<sup>53</sup> But because more than four times as many students passed the reformed courses (51 percent passed compared to 12 percent), the instructional cost per successful student was significantly lower: \$3,800 per student who progressed, compared with \$7,800 under the traditional model.

The savings to students could also be significant. The US Department of Education estimates that American students are spending \$1.3 billion a year in out-of-pocket costs for remediation, for which they typically receive no college credit.<sup>54</sup>

## **Implementation Challenges**

Some four-year universities are refusing to accept some of the new remedial courses as transfer credit. Because of inconsistent implementation, the results of some of the reforms are not uniform across colleges.<sup>55</sup>

While raising students to at least college-level numeracy and literacy is crucial, it is only the first step in their long journey toward skill mastery and career success. Fixing remediation is a necessary but not a sufficient milestone toward expanding access to high-value higher education.

## **A Sound Investment**

Although there are concerns about the details of implementation, there is little debate over the nature of the big steps colleges need to take to improve Americans' access to and success in high-value higher education: use evidence-proven teaching methods, offer plenty of guidance and support, and make college prices affordable.

There is also little debate that such steps require significant upfront investments. But a growing body of research indicates they will begin to pay dividends—to the institutions and the students—in as little as a year or two. Perhaps more importantly, the expanding opportunities and improving productivity and civic engagement among our fellow workers and citizens will pay dividends for our country for decades.

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