



EDUCATION**SECTOR**

www.educationsector.org

EDUCATION SECTOR REPORTS | March 2006

Measured Progress:

A Report on the High School Reform Movement

By Craig D. Jerald

About the Author

Craig Jerald is an independent consultant living and working in Washington, D.C. He has been a principal partner at the Education Trust, an advocacy and research organization, and a senior editor at *Education Week*, where he served as project director for the annual *Quality Counts* report. He can be contacted at cjerald@comcast.net.

About Education Sector

Education Sector is an independent education think tank based in Washington, DC. It is a nonprofit and nonpartisan organization devoted to developing innovative solutions to the nation's most pressing educational problems. It seeks to be a dependable source of sound thinking on education policy and an honest broker of evidence in key education debates in Washington and nationally.

Acknowledgements

Thomas Toch edited the report. Wray Herbert served as copyeditor. Sharon Cannon designed the publication.

This report was made possible in part by a grant from the Carnegie Corporation of New York. The statements made and views expressed are solely the responsibility of the author.

© Copyright 2006 Education Sector. All rights reserved.

1101 Pennsylvania Ave, N.W., Fifth Floor, Washington, DC 20004
202.756.4944 • www.educationsector.org



Table of Contents

The Challenge 3

The Evidence 5

A Further Agenda..... 14

Conclusion 16

Endnotes..... 17

The Challenge

America's education reformers have focused tremendous energy on improving the nation's high schools in the last half decade. Spurred by sobering reports of ill-prepared students and a billion dollars in funding from the Bill and Melinda Gates Foundation, policymakers nationwide have embraced the issue. Political, business, and education leaders convened at a National Education Summit on High Schools in Washington, D.C. in 2005. Later that year, the National Governors Association awarded the first of nearly \$24 million in grants to over two dozen states to develop comprehensive high school improvement plans and every governor has signed an unprecedented NGA pact to measure high school graduation rates more accurately.

Commission reports, conferences, and research briefs have made a compelling case for reform: Only 68 percent of the nation's high school freshmen—and only about half of African American and Hispanic students—graduate on time.¹ Just 57 percent of high school graduates take the core academic courses proposed by a national commission two decades ago.² As a result, only *one in three* high school freshmen graduate on time with the academic preparation necessary to succeed in college.³

And while test scores of younger students have risen in recent years, with 9-year-olds scoring higher in reading and math than ever before on national measures and racial achievement gaps at their lowest levels in 30 years of tracking them, today's 17-year-olds score no higher in reading and math than did teenagers in the early 1970s.⁴

Nor are high schools doing well by many of their best-prepared students. One quarter of Chicago students entering high school in 1999 in the city's top achievement quartile ran into serious academic trouble by the end of ninth grade, and only 37 percent of those struggling students graduated four years later.⁵

Today's calls for high school reform echo those of *A Nation At Risk* and other national studies of American education in the mid-1980s. The emerging knowledge-based economy, in which decent-paying jobs required brains rather than brawn, the reformers

of that era argued, demanded that public high schools provide a rigorous academic education to their entire student population, rather than to only a small percentage of their students, as they had done in the past. Arguing that traditional academic disciplines were the best vehicle for preparing students for the new workplace and instilling in them a common "cultural language," reformers called for an academic core curriculum in the nation's high schools. "The best vocational education will be one in general education in the use of one's mind," argued TheodoreSizer in *Horace's Compromise*, his influential 1984 study of public high schools. Sizer, Ernest Boyer in his 1983 report *High School*, and John Goodlad in *A Place Called School* called for the nation's high schools to be reconfigured into smaller, more personal settings to combat the widespread apathy and alienation they attributed to the anonymity of the nation's many large, comprehensive high schools.

But as the school reform movement evolved during the 1980s and 1990s, reformers turned their attention to school choice and other market-based reforms and to the task of holding educators more accountable for student achievement. Many states followed *A Nation At Risk's* recommendation to raise high school course-taking requirements. But rarely did such steps result in meaningful changes in curriculum content, and only in a few states and school systems did policymakers respond to the calls for extensive high school reforms.

The Gates Foundation put high school reform back on the national agenda when in 2000 it launched a five-year high school initiative initially focused on addressing the anonymity that Sizer, Boyer, and Goodlad had identified as such a significant detriment to the productivity of public high schools.

But today's high school reform agenda is in an important way much more ambitious than that of two decades ago. While *A Nation At Risk* warned that "America's position in the world" depended on most students being prepared for college or skilled jobs, the federally funded report never mentioned dropouts in its long list of indicators that America's education system was failing its students.⁶

Today, there is a clear consensus, expressed at the 2005 national high school summit, that high schools must find ways to ensure that all graduates leave prepared for college and skilled jobs, while *simultaneously* finding ways to curb the nation's massive dropout problem. High school reform, today's reformers believe, must combine both excellence and equity.

Thomas Toch, now co-director of Education Sector, framed the challenge in his 1990 book *In the Name of Excellence*. What is needed, he wrote, "is a synthesis, on a broad scale in public education, of the 1960s reformers' desire to humanize schools and the 1980s reformers' commitment to rigorous academic standards."⁷

An important aspect of that synthesis, today's reformers say, is providing students with a curriculum that is *both* more rigorous *and* more relevant, rather than engaging in the long-standing tradition in American secondary education of sacrificing one to optimize the other. The Gates Foundation has captured the major underlying principles of today's high school reform movement—and the movement's ambitiousness—in what it calls the Three R's: rigor, relevance, and relationships.

The movement resembles a sprawling 19th Century Russian novel, with dozens of characters and innumerable subplots. And it is moving at the fast pace of a Hollywood thriller. But reformers are pursuing their ambitious agenda largely through five major strategies—improving school climate,

strengthening curriculum and instruction, raising graduation requirements, helping freshmen get up to speed academically, and preventing students from dropping out.

Importantly, these reform efforts have been accompanied by an equally ambitious effort to gauge the reforms' effectiveness. Researchers have conducted a range of studies on the high school reforms of the last half-decade. The results are important—and promising.

The American high school, it turns out, is not as impervious to change as many believe it to be. Reformers in many cities have replaced large, "comprehensive" high schools with smaller, more personal learning communities where anonymity gives way to a sense of shared purpose, where, as a result, teachers and students are motivated to work harder.

Requiring students to take greater numbers of rigorous courses that are more likely to prepare them for college does not necessarily lead to lower graders or higher dropout rates, if the courses are taught by capable teachers.

Intensive "catch-up" courses help a significant percentage of students who enter high school well behind their peers reduce their chances of dropping out and get back on the track to college.

But researchers have found that creating more supportive educational environments for students is critical, but doing so produces more significant improvements in student learning when combined with high expectations and rigorous instruction. Improving school climates alone is not the answer.

Many students learn demanding academic content better when it is infused with workplace applications and problems. But teachers need help in creating such courses, researchers say.

And there's a growing consensus that struggling high schools require directive support from outside organizations—especially the 15 percent of the nation's high schools (2,000 schools) that produce 50 percent of its dropouts.

Education Sector has summarized the findings of this important new research in this report to give educators, policymakers, the press, and the general public a readily readable resource with which to pursue and evaluate high school reforms.

The Evidence

Personal, Challenging, Engaging

Thousands of educators are working to create high school environments in which learning is more likely to take place than is the case in many of the nation's typically large, often impersonal "comprehensive" high schools today. Supported by sizeable grants from Gates, the Carnegie Corporation of New York, and other philanthropies, they are replicating "model high schools" that have found ways to establish more supportive climates for learning, and they are breaking large high schools into "small learning communities" that share a building or campus, where anonymity gives way to a sense of community, a sense of shared purpose, and where, as a result, teachers and students are more motivated to work hard.

A substantial body of research supports these efforts and some of the most persuasive evidence comes from the work of Anthony Bryk, formerly of the University of Chicago and now at Stanford, and the University of Michigan's Valerie Lee. During the 1980s, these two researchers independently began questioning why Catholic school students were outperforming public school students, even when they came from similar backgrounds. What they found, somewhat surprisingly, is that student performance had little to do with better parenting or stricter discipline, but rather with how the parochial schools were organized and operated. They later found the same was true for better-performing public high schools. All else being equal, the researchers concluded, secondary schools do better when they are smaller; have high academic expectations for students; and have teachers who take collective responsibility for learning and establish strong, supportive relationships with students.⁸

The research shows, in other words, that good high schools push all students academically *and* give them lots of adult support, both inside and outside the classroom. This is the antithesis of many

traditional, comprehensive high schools, where teachers work in isolation, where few students are encouraged to work hard, and where those who struggle academically or socially are simply left to drift on their own.

Over the last six years, Gates alone has invested more than \$1 billion to create more than 1,500 "small learning communities" of, optimally, fewer than 400 students each. Some were built from scratch while others were incorporated into existing school buildings. The new schools are replications of promising "model schools" that the foundation had identified throughout the country, such as High Tech High in San Diego. In other cases, existing high schools have been "redesigned" in order to break them up into smaller, semi-autonomous units.

The foundation also invested \$5 million in a major, multi-year evaluation of the initiative conducted by the American Institutes for Research and SRI International, both of which are independent research organizations. Evaluators surveyed teachers and students in dozens of schools between 2002 and 2004 and followed up with visits to 30 schools during the 2003-04 school year. They judged how well the new schools were doing in the following areas: personally tailored learning, relationships based on mutual respect and responsibility, high expectations, a shared focus, and teacher collaboration.⁹

The foundation released a summary of the evaluation results to date in November 2005. During their first year in operation, the new schools came to resemble the models on which they were based, especially in the realm of relationship building. A typical comment: "Students feel cared for and supported [and] teachers work together collaboratively in a culture that focused first and foremost on the students." Although some schools were more successful than others, the report concluded that "most have the 'relationships' piece of the foundation's vision firmly in place."¹⁰

The redesigned high schools made less progress toward that vision than new ones. Indeed, a number of the redesigned schools continued to struggle with low attendance and other issues. Even so, such schools demonstrated marked improvements in school culture, especially in creating a more

personalized, caring climate. “The most significant positive change [...] was an improvement in interpersonal relations,” the evaluators noted. “Students reported feeling better known and supported by school staff after school redesign.”¹¹

Though the early results were generally positive, the evaluators sounded one note of caution. Even within the same school building, there were significant differences in personalization and academic expectations among different small learning communities. In some cases, permitting students to choose their small learning communities “caused unequal distribution of various types of students.”¹² Other recent research on efforts to create “schools within schools” has corroborated those cautionary findings, and suggests that the problem, if left unchecked, eventually could lead to students sorting themselves based on race, social class, and academic background, in effect recreating the school-initiated system of “tracking” students of different backgrounds into different academic programs, a vestige that the Gates reforms were intended to eliminate.¹³

Strengthening Curriculum and Instruction

Breaking down large, impersonal high schools into smaller learning communities, Gates and others reasoned, would help create conditions that would promote learning, and Gates conducted a second study to determine whether a more supportive learning climate translates into stronger curriculum and instruction in the classroom. During 2002-03 and 2003-04, evaluators collected classroom assignments and student work from 12 new high schools and 12 traditional, comprehensive high schools that had yet to be redesigned. They then asked experienced teachers to evaluate both the intellectual rigor of the assignments and how closely they were connected with real-world applications and student interests.

The findings were mixed. On the positive side, English teachers in new high schools gave students assignments that were much more demanding and more relevant than assignments given by their peers in traditional high schools. But math teachers in new schools were no more likely than those in conventional schools to assign intellectually demanding class work. Indeed, fully half of the math assignments collected from both types of schools exhibited “little or no” rigor.¹⁴

In English, student work tended to be of somewhat higher quality in new schools compared with what students produced in traditional high schools. But in mathematics, students in the new schools actually did more poorly: 64 percent of student work samples were judged to be of very low quality, compared to 43 percent in traditional high schools.¹⁵ Overall, the evaluators concluded that “the quality of student work in all of the schools we studied is alarmingly low.”¹⁶ It’s not surprising then, that except for a slightly more positive trend in reading scores, test results in most Gates-funded schools generally are no better than in traditional schools, at least so far.¹⁷

The early structural changes in the foundation-sponsored schools were supposed to lay the groundwork for changes in teaching and learning, but that hasn’t happened in very many places. Says Tom Vander Ark, Executive Director for the Bill and Melinda Gates Foundation’s education initiatives: “With many of our early grants, I encouraged people to fix the architecture. Several years later, many of those same folks are stuck in architectural arguments and never got to the heart of the issue—teaching and learning.”¹⁸

The message is that creating conditions in which learning can take place is critical but not sufficient. As Valerie Lee has written, “The positive link between social support and learning was *contingent* on the school also exerting considerable academic [pressure on students].”¹⁹ Reform, it is increasingly clear, depends on improving both school climate and the quality and rigor of classroom instruction.

Mathematics presents a special challenge. Math teachers told the Gates-funded evaluators they had a very difficult time finding ways to make the subject more engaging and relevant for students while simultaneously covering all of the skills and concepts that states—and, for that matter, colleges—expect students to learn.

That’s bad news for students. Math courses play an especially powerful “gatekeeper” role in college admissions and graduation, and success in the traditional math curriculum is a predictor of higher wages in the workplace.²⁰ Today, even “blue collar” jobs call for more than basic computational skills. Don Davis, the director of an apprenticeship program for union electricians in California, told the *Los Angeles Times* in January 2006 that “in the

real world” wiring and plumbing buildings “requires algebra.”²¹

Mid-course Corrections

The Gates Foundation began modifying its high school reform strategy as the results of the AIR/SRI evaluation began to emerge. While not abandoning its belief that high schools can change largely on their own, the foundation has now embraced a “tighter” approach designed to ensure that the schools it supports have rigorous standards and challenging classroom instruction. Says Vander Ark: “I visited 100 great schools and made the observation that they were all small, autonomous, and assumed that was a path to school improvement. It turns out giving a failing school autonomy is a bad idea.”²²

Gates has shifted a larger share of funding to “franchisers” and “charter management organizations,” entities that offer much more specific curriculum-driven school improvement models. They also tend to take a more supportive—and sometimes more directive—hand in managing the academic affairs of high schools. Less is left to chance.

Other organizations involved in high school reform have come to the same conclusion as Gates about the need for prescriptive solutions for failing high schools. In 2005, MDRC, a New York-based research and evaluation firm released an evaluation of efforts to replicate First Things First (FTF), a school-improvement model initially—and very successfully—implemented in Kansas City, (Kan.). The FTF model breaks high schools into small learning communities, provides students with one-on-one adult mentoring, and gives teachers opportunities to work together to improve their classroom teaching. The study concluded that: “Changes in structure (for example, the creation of small learning communities) took hold more easily than changes in instruction.”²³

Like the Gates Foundation, the Philadelphia-based Institute for Research and Reform in Education, which created the FTF model and helps schools implement it, has responded by adding more “non-negotiable” elements to its high school reform strategy. It has stopped using external consultants to help teachers improve instruction and instead developed a more uniform, systematic approach

that can be used across high schools implementing the model, including specific ways teachers can collectively examine classroom teaching and student work samples. It has also created on-line curriculum and assessment materials and contracted for a standardized literacy and math curriculum for students who enter several years below grade level.²⁴

Gates is also beginning to invest in more systemic reform strategies, rather than single-school solutions. It is helping school districts build portfolios of small schools that are better supported by common curricula, assessments, and “instructional management systems”—districtwide strategies that rely on frequent standardized learning assessments to monitor student progress and ensure the effectiveness of classroom teaching. As a sign of this philosophical shift, the foundation gave Atlanta \$1.4 million to create a district-wide plan for ensuring rigorous classroom curricula and instruction in all of the city’s high schools, including the new “small learning communities” being created with the foundation’s support. And in Chicago it is supporting an effort that will permit high schools to choose from two or three “instructional models” deliberately aligned with the state’s academic standards and with most college entrance requirements.

Mixing in Some College

The foundation has also invested more than \$60 million to support the creation of so-called early college high schools, small secondary schools that integrate college courses into their curricula. This approach allows students to earn up to two years worth of credits toward a college degree while they earn their high school diploma. The aim is to eliminate wasted time during the junior and senior year and provide students with college-level content as soon as possible, giving them a head start on earning an eventual four-year degree. The initiative will create 170 new early college high schools by 2008, with the aim of enrolling about 68,000 students by 2012.²⁵

Early college high schools are one strategy in a burgeoning movement to bring college into the high school classroom. Enrollment in the Advanced Placement program—which was introduced by the College Board in 1955 as a way to offer a small number of college-bound students the opportunity to take college-level coursework—has more than

doubled over the last decade.²⁶ Last month the College Board released data showing that the proportion of public high school graduates who have earned a passing mark on one or more AP exams increased in all fifty states over the last five years, growing from about 10 percent nationally for the class of 2000 to 14 percent for the class of 2005.²⁷ Some states have encouraged greater participation in the AP program by offering to pay for students to take AP exams or providing training for teachers to learn how to teach the courses. And the Bush administration recently unveiled a proposal to more than double the number of high school teachers certified to teach AP math and science courses.

In addition to expanding AP, many states are encouraging “dual-enrollment” agreements between secondary and higher education systems, allowing high school students to take courses provided directly by colleges and universities themselves—either at the college or in high schools. Last year the U.S. Department of Education released a new study showing that over half of all U.S. colleges and universities enrolled high school students for college credit in 2002-03, and some 813,000 high school students—about one in twenty—participated.²⁸

Although these initiatives have a great deal of common sense to recommend them, little formal research has been conducted on whether the effort to expand early college high schools, Advanced Placement courses, and dual enrollment will improve high school curricula or better prepare students for postsecondary success. Researchers agree that performing well on AP exams is a good predictor of college success, but disagree on whether simply completing an AP course has any value. A study by Saul Geiser and Veronica Santelices of the University of California, Berkeley, found that students who score well on AP exams have better college grades and graduation rates, but the same is not true for students who take AP courses without taking the exams or who receive low scores on the exams.²⁹ Researchers are conducting evaluations of dual-enrollment and early college high schools, but no results have been released yet.

Raising Academic Graduation Requirements

Reforms have also sought to ready more students for college by increasing graduation requirements in core academic subjects.

A 2002 federal survey found that 72 percent of high school sophomores said they expected to earn a bachelor’s degree or higher, yet only about 51 percent said they were enrolled in college-prep courses.³⁰ A follow-up survey conducted two years later found that, among seniors planning to attend a four-year college, nearly two thirds had not mastered intermediate-level mathematics concepts necessary for handling college-level work, and one third had not mastered even simple problem solving strategies requiring low-level math skills.³¹

Such students pay a steep price for lagging behind in high school. Nearly a third of recent high school graduates entering college fail placement tests and must enroll in remedial courses—classes that cover what students should have learned in high school and earn them no credit toward graduation.³² Unfortunately, for too many students, the help is too little too late. Three out of four college freshmen who take a remedial reading course fail to earn a diploma, as do two out of three who have to take two remedial math classes.³³ Overall, less than 65 percent of students at four-year institutions earn a college degree within six years, a low rate of return due in part to poor high school preparation.³⁴

In response, reformers have called on policymakers to ramp up graduation requirements in several ways—by aligning high school tests with the placement exams students take when they get to college, and by requiring students to complete a full college-prep course sequence, including four math classes that extend at least through Algebra II.

The goal is to have all students demonstrate that they are prepared for college in order to earn a high school diploma, a goal that would have been met with incredulity as recently as ten years ago. Since 2001, eight states and Los Angeles, the second-largest school district in the nation, have decided to begin requiring students to complete such a college-prep course sequence.

Rigor and Relevance

Many educators are concerned that raising graduation standards would increase dropout rates. Indeed, there is a widespread belief that the only way to increase graduation rates is to lower the academic bar, trading rigor for relevance in the curriculum. “We’ve cut out enough [elective]

courses for kids who are not college-bound,” Donna Haschke, the president of the Texas State Teachers Association, told *Education Week* in 2005. “We still have concerns about the number of dropouts... Elective courses are the ones that keep them in school.”³⁵

The evidence is mixed. A recent international study by Cornell University professor John H. Bishop found a positive association between the number of students in career and technical education and high school completion rates.³⁶ Score one for relevance. But other research suggests that focusing the high school curriculum on core academic subjects raises graduation rates. For example, Valerie Lee’s research shows that, other things being equal, high schools that offer a “constrained curriculum” — meaning more academic courses and fewer general-track, remedial, and elective courses—have *lower* dropout rates: “This finding flies in the face of those who say that high schools must offer a large number of non-demanding courses in order to keep uncommitted students in school.”³⁷

Reformers more and more are thinking that the answer lies somewhere in the middle—in a combination of rigor and relevance. Johns Hopkins University researchers recently found that enrollment in career and technical education is positively associated with higher graduation rates, but *only* when the tech courses are taken along with more challenging academic courses. The ideal ratio appears to be one to two: one career or technical course for every two academic courses.³⁸

Higher Expectations

As counterintuitive as it may be, low-achieving students do not appear to suffer from taking tough, college-prep courses. When the Southern Regional Education Board tracked over 3,000 students from middle school into high school several years ago, it found that low-achieving eighth graders were *less likely* to earn D’s and F’s—a good predictor of dropping out later on—if they enrolled in college prep courses rather than “easier” academic classes.³⁹

The San Jose Unified School District had a comparable experience. Five years ago, it became one of the first large districts in the nation to require

seniors to complete a full college prep course sequence in order to earn a diploma. Since then, the number of San Jose graduates completing the full “A-G sequence”—a set of courses Californians must complete to be eligible for admission to the state’s two public university systems—has nearly doubled.

At the same time, district officials say that classroom grades are up, and the state reports that San Jose’s graduation rates have *increased* slightly even as the California average declined.⁴⁰ Those results figured prominently in a successful grassroots campaign to get a similar policy enacted in Los Angeles last year.

Yet perhaps the most compelling evidence on the question of graduation requirements and graduation rates comes from Chicago.

As part of a major initiative to overhaul the city’s high schools, Chicago in 1997 raised its graduation standards to well above Illinois’ statewide standards. Beginning with entering freshmen in 1997-98, students were required to complete the courses necessary for entry to competitive state universities—four years of English, three years of math (including algebra, geometry and advanced algebra/trigonometry), three years each of social studies and lab sciences, and two years of foreign language.⁴¹

Many worried that the graduation requirements would push students to drop out, and that coupled with the state’s strict accountability for test scores, it might cause educators to turn a blind eye to drop-outs or even encourage low-achieving students to drop out.

But those concerns turned out to be unfounded: Graduation rates *improved* over the next few years. An analysis by the Chicago Consortium on School Research found that most of the improvement was due to higher levels of preparation among entering ninth graders—the result of K-8 reforms. But a small part was driven by the new graduation requirements themselves. They encouraged freshmen and sophomores to take and complete more courses, and students who accumulated more credits early in high school were more likely to earn on-time diplomas.⁴²

Many educators are also very worried about the trend toward standardized exit exams for high schools. They are concerned that high-stakes tests will discourage low-achieving students from sticking with high school. A widely cited 2003 *New York Times* article presented a more ominous scenario, offering a slew of anecdotal evidence that educators are “pushing out” low-performing students in order to pump up schoolwide passing rates.⁴³

But the two most sophisticated recent studies on the issue—both of which used statistical controls and tracked graduation rates as testing policies changed over time—do not support the push-out theory. They offer strong empirical evidence that exit exams do not *necessarily* increase dropout rates.⁴⁴

Those studies have settled the question for some researchers and reformers. Jay Greene, an analyst at the conservative Manhattan Institute, and the co-author of one study, now calls the push-out phenomenon a myth, writing that “our first intuitions simply do not correspond to the evidence. The highest quality research available shows no relationship between adopting an exit exam and graduation rates.”⁴⁵

Other researchers, however, say the jury is still out. Most current exit exams still test fairly low-level skills, they say, and nobody can predict with absolute certainty whether graduation rates will suffer if states introduce a new generation of much tougher exit exams tied to college entry standards.

Coursetaking and Student Achievement

A large body of research has found that taking more rigorous courses can improve students’ achievement during high school and lead to success in higher education. In 1999, Clifford Adelman, a U.S. Department of Education researcher, published an analysis showing that “the academic intensity and quality of one’s high school curriculum (not test scores, and certainly not class rank or grade point average) counts most in preparation for bachelor’s degree completion.”⁴⁶

Adelman’s finding soon became a rallying cry among reformers, and several more studies have since confirmed the power of taking challenging courses. Edward Warburton, Rosio Bugarin, and Anne-Marie Nunez, the authors of a study on college outcomes

among young people whose parents do not have college degrees, found that, “after holding all other variables constant, students who took rigorous coursework in high school significantly increased their chances of staying on the persistence track to a bachelor’s degree in college.”⁴⁷ And a February 2006 U.S. Department of Education study by Adelman confirmed that the quality and rigor of high school courses remains the biggest predictor of college completion.⁴⁸

Even *low-achieving* students benefit more from being placed in challenging courses than in easier ones. A study by Adam Gamoran and Eileen Hannigan at the University of Wisconsin-Madison, for example, found that students of all achievement levels had higher learning gains between eighth and tenth grade when they took algebra instead of general math courses.⁴⁹

Yet other research has contributed an important caveat to such findings: Enrollment in advanced high school courses *alone* does not guarantee academic success. The pay off comes only when such courses are taught by capable teachers who challenge their students.

Consider Chicago’s experience. Despite the city’s 1997 decree that students must take high level courses to graduate from high school, the *Chicago Tribune* in 2005 published a devastating article on the dismal preparation of the city’s public school students entering area colleges. The paper found that more than 60 percent of freshmen failed the placement test in English and had to take a remedial course in the subject at the seven campuses of the City Colleges of Chicago. About 70 percent failed the writing test and over 90 percent failed the math test.⁵⁰

Similarly, the Illinois Education Research Council (IERC) reported in 2005 that the level of college preparedness—as measured by the ACT exam—is much lower among Chicago public high school students than among those who attend school elsewhere in Illinois, even though the city’s graduation standards are much tougher than the statewide requirements.⁵¹

Another IERC study didn’t dispute Adelman’s basic finding on the benefit of advanced courses to low-

achieving students like Chicago's, but it made clear that the value of high-level courses to Chicago students was much diminished if they were taught by unqualified teachers, as is often the case in Chicago.⁵²

A 1999-2000 study of Chicago high school classrooms by researchers G. Alfred Hess and Solomon Cytrynbaum of Northwestern University revealed just how bad instruction is in many of the city's high schools. "Chicago students were not being asked to do more than regurgitate answers from texts," they reported. "In some classrooms, it was evident that the teachers did not know how to lead students to think more deeply about the matters they were covering, and frequently gave little indication that they had thought more deeply about the subject matter." Still other teachers, they found, believed "their students were incapable of thinking deeply."⁵³

"Taking the classes isn't the same as learning the material," says Elaine Allensworth, associate director of the Consortium on Chicago School Research, an organization located at the University of Chicago and founded in 1990 to provide independent analyses of the city's progress in improving its schools.⁵⁴

In other words, "college-prep" courses only prep students for college when the courses are taught by capable teachers who provide a challenging curriculum and motivate students to master the material. Low-income and minority students, research suggests, are least likely to get the good teachers, solid curriculum, high expectations, and intensive support that make higher-level courses pay off.

Part of the problem is that seniority-based staffing and other provisions in collective-bargaining contracts result in mismatches between teacher skills and the courses they are assigned to teach. The Education Trust—West, a research and advocacy organization, in 2005 analyzed whether Los Angeles had enough qualified teachers to provide an "A-G" curriculum for all of the city's high school students. It concluded that, yes, the city had enough qualified teachers, but that the qualified teachers aren't teaching the right classes: "Teachers who are qualified to teach intermediate algebra and geometry are instead teaching pre-algebra and beginning algebra."⁵⁵ The district will have to solve

that problem if it wants future students to benefit from the higher-level courses it plans to require them to take several years from now.

Putting Tests to the Test

Nearly half the states now require students to pass some kind of test in order to earn a high school diploma, and high school students seem eager to know whether they are adequately prepared for college. The California State University system several years ago augmented existing state tests in English and math to develop an Early Assessment Program for high school juniors. Nearly 70 percent of eligible California eleventh graders *volunteered* to take the math test in 2005.⁵⁶

But few states test the skills that students need to avoid remedial classes in college. And that's a problem. Cornell researcher John Bishop has found that minimum competency exams in math and reading have little or no positive effect on student achievement. The *Boston Globe* reported in May 2005 that 37 percent of public high school students entering Massachusetts colleges and universities still had to take remedial courses—only 2 percentage points below 2002, the year the state's exit exam became a graduation requirement.⁵⁷ But the Massachusetts exams, while tougher than many, still have not been fully aligned with standards for college readiness. In contrast, curriculum-based exams used in Europe and some U.S. states—such as the end-of-course exams given in New York and North Carolina—do improve learning and help to reduce the achievement gap between low-income students and their peers.⁵⁸

Getting Students Ready for Rigor

The push for rigorous classroom curricula and tougher graduation requirements has generated increasing concern about the poor academic preparation of many entering ninth graders, particularly in disadvantaged communities. In a study of non-selective neighborhood high schools in Philadelphia, researchers Ruth Curran Neild and Robert Balfanz found that only one in four freshmen had reading skills appropriate for his or her age, and about half read at the *sixth grade level or below*.⁵⁹

Most adolescents can sound out words, but many have poor reading-comprehension skills that make it hard for them to understand the reading

materials assigned in academic courses. In response, foundations, the federal government, and many organizations have invested in “adolescent literacy” programs that provide instruction aimed at helping teenagers rapidly acquire the reading skills necessary to handle rigorous coursework. The intent is to replace traditional “remedial” strategies, which slow down the pace of instruction for students who enter behind their peers, with “accelerated” instruction that quickly catches them up and helps them handle challenging college-prep coursework.

The number of such programs has skyrocketed in the last few years. A recent survey by Cynthia Shanahan of the University of Illinois found “what appears to be a burgeoning array of adolescent literacy intervention programs. [...] The number and range of programs on or about to appear on the market can make it difficult for a district to choose.”⁶⁰ The same is not yet true in mathematics, however. While some organizations have begun to create accelerated math interventions, there are far fewer programs available.

Beyond small pilot studies conducted by program developers, little large-scale research on accelerated literacy and math programs has been conducted. The U.S. Department of Education in 2005 contracted with two national research and evaluation firms, MDRC and the American Institutes for Research, to conduct a large-scale evaluation of two popular ninth-grade literacy intervention programs. The evaluation currently is taking place in 34 high schools—all of which use a “small learning communities” structure—across ten school districts. The results won’t be available for several years.⁶¹

So far, the only large-scale evaluation of accelerated “catch up” courses in reading and math appears to be one conducted by Johns Hopkins University researchers affiliated with the University’s Talent Development high school model. Ninth graders in Talent Development high schools spend double the amount of time in math and English courses for the entire year—90 minutes in each. During the first semester, they take three classes designed to give them the academic and study skills necessary to handle college prep courses later on—Strategic Reading, Transition to Advanced Mathematics, and Freshman Seminar. During the second semester, teachers follow the district’s regular English and

Algebra 1 curriculum, supplemented with special materials developed by Johns Hopkins University.

The researchers conducted three studies across multiple high schools in several cities, comparing the achievement levels and gains of students in high schools using the Talent Development courses with those in demographically similar “comparison schools” not using them. They found that students taking the Talent Development catch-up courses significantly outperformed their peers in comparison schools, taking into consideration students’ previous achievement levels and their attendance during the school year. Interestingly, students who started out with higher than average achievement seemed to benefit from the courses too, leading the researchers to conclude that high-poverty urban high schools should consider making such courses standard for all entering freshmen.⁶²

Preventing Students from Dropping Out

Research on the dropout problem clearly suggests that graduation rates should improve if reformers are successful in implementing several of the strategies discussed above:

School climate. Two recent studies by Valerie Lee and colleagues found that the high school characteristics promoted by the Gates Foundation’s high school initiative substantially reduce dropout rates. Schools have lower dropout rates if they have: smaller enrollments, better interpersonal relationships among students and adults, teachers who are quick to give students extra help when they need it, and a focused and rigorous curriculum.⁶³ Lee and the University of Maryland’s Robert Croninger found that schools with strongly supportive relationships among teachers and students “reduce the probability of dropping out by nearly half.” And the benefits are especially great for low-achieving, low-income students.⁶⁴

Improving the climate for ninth graders alone can make a difference. A study by Kerri Kerr of the RAND Corporation and Nettie Legters of Johns Hopkins University found that Maryland high schools using a “schools within a school” strategy or a team teaching approach for ninth graders “showed substantial improvements on promotion, dropout, and achievement outcomes between 1993-94 and 1999-2000.”⁶⁵

Rigorous and Relevant Curriculum. Lee and University of Michigan colleague David Burkham found that high schools offering a “constrained curriculum”—more academic courses and fewer general-track or elective courses—in mathematics have lower dropout rates: Schools that offered fewer math courses below the level of algebra I reduced the odds of dropping out by 28 percent, and those that offered calculus reduced the odds by 55 percent.⁶⁶ However, as discussed above, research also suggests that high school educators who find the right balance between relevance and rigor in the curriculum will encourage even more students to stay in school and graduate.

Preparing Students for Rigor. Catch-up courses for struggling ninth graders also significantly reduce dropout rates. Students who enter high school poorly prepared are more likely to fail ninth grade, and students who fail ninth grade are far more likely to drop out. The cycle is particularly evident in high-poverty urban high schools. One Philadelphia study found that 43 percent of freshmen who entered with math and reading skills below the seventh-grade level failed ninth grade, compared with only 18 percent of those with at least eighth-grade skills. Another study found that 60 percent of the students who failed ninth grade also failed to graduate, compared with less than 12 percent of those who made it through freshman year.⁶⁷

An increasing number of states and districts also are pursuing more targeted strategies specifically focused on “dropout prevention,” including giving extra attention to students identified as being at greater risk of dropping out. But many researchers downplay the value of one popular approach—activities outside the regular school day that are targeted at individual students, such as homework help, counseling, or classes intended to bolster self-esteem and leadership skills. Several highly sophisticated, large scale evaluations of federally-supported dropout prevention initiatives have found that such “supplemental” programs generally do not work. Says Mark Dynarski of Mathematica Policy Research, Inc., the author of one such study: “Supplemental programs had almost no impact on student outcomes. None of the programs affected the dropout rate, and average student grades, test scores, and attendance were similar among treatment- and control-group students.”⁶⁸

That’s not to say individual interventions can never produce positive results. But to do so, research shows, they must be very intensive. A program called Check & Connect, an intervention developed in the late 1990s by a group of University of Minnesota researchers and local educators with support from the U.S. Department of Education, has demonstrated promising results in several studies. Check & Connect relies on frequent, systematic monitoring of student “warning signs”—such as absenteeism or disciplinary problems—and timely interventions to produce gains in attendance, educational engagement and, ultimately, graduation.⁶⁹

Combining Reforms

But most researchers contend that only intensive, pervasive *institutional* reforms can significantly improve graduation rates in the nation’s most troubled high schools: “High schools with high dropout rates need to be directly targeted and radically reinvented if they are going to see substantial improvement,” conclude Robert Balfanz and Nettie Legters, researchers at Johns Hopkins University.⁷⁰

Importantly, the dropout problem is very unevenly distributed across the nation’s high schools. Balfanz and Legters report that 2,000 high schools—about 15 percent of the nation’s total—produce half of the nation’s dropouts. Those “dropout factories” are primarily located in the country’s 50 largest cities and in cities and small towns across the south and southwest. They disproportionately enroll low-income and minority teenagers.⁷¹

Results from a rigorous evaluation of the Talent Development model released by MDRC in 2005 suggest that even such severely challenged high-poverty schools can improve ninth-grade promotion and on-time graduation rates if they “layer on” overlapping reform strategies. Talent Development reshapes ninth grades into small, highly supportive learning communities called “Success Academies,” in which students take the program’s intensive “double dose” periods of accelerated math and literacy courses that lead into college-prep courses. Those courses, as well as a “freshmen seminar” course to enhance study skills, are based on a common curriculum, and Johns Hopkins provides teachers with a great deal of training and support for teaching it.

In Philadelphia, a group of neighborhood high schools replicating Talent Development have seen substantial improvements in several successive waves of ninth graders. “In a [Philadelphia] high school of 500 first-time ninth-graders, Talent Development adds about nine days of school attendance for each student and helps an extra 125 students pass algebra, an extra 40 students achieve promotion to the tenth grade, and an extra 40 students graduate on time,” evaluators concluded.⁷²

Researchers believe that the Talent Development model gets results because it addresses the academic and human sides of school reform simultaneously.

The recent evaluation of the program by MDRC noted that Talent Development’s strong positive impacts seem to come from implementing prescriptive strategies for upgrading curricula and improving teaching, at the same time high schools are broken into smaller, more personal learning communities.⁷³

But the MDRC study also revealed how difficult solving the dropout problem is going to be. Researchers found that the Talent Development model had far less success for ninth graders who already had repeated a grade. “Even in a Talent Development school,” evaluators cautioned, “a typical ninth-grader will still miss about 40 days of school, nearly a third will not be promoted to the tenth grade, and more than half will not be ready to graduate within four years. Even successful interventions like Talent Development...need much more power.”⁷⁴

Balfanz and Legters contend that in districts with the least-prepared ninth graders and the worst dropout problems, middle schools must be made part of the high school improvement agenda: “High school reform must ultimately be seen as part of a broader secondary school-reform movement,” they write.⁷⁵

A Further Agenda

Recent research and experience suggests that the high school reform movement faces three major challenges.

Making Rigor Relevant

Most teachers have been left to their own devices to combine rigor and relevance in classroom instruction, and, as the AIR/SRI evaluation of the Gates high school reform effort documented, they clearly are clamoring for help. A number of researchers agree that they need it. Anthony Carnevale, an economist at the National Center for Education and the Economy and one of the nation’s leading experts on the relationship between education and the workforce, argues that high school reformers must help teachers deal with what he calls “curriculum mismatch.” The traditional academic curriculum taught in most “college prep” tracks does help students develop general math and verbal reasoning skills that are valuable for today’s workplace, Carnevale argues. “Success in the traditional academic curriculum, especially mathematics, is the most powerful predictor of wage advantages,” he wrote in a 2005 paper.⁷⁶

But Carnevale points out that the traditional academic curriculum evolved as a way to train future academics, and might not be the only way, or the best way, for all students to develop those skills. He calls for a new kind of curriculum that integrates traditional academic knowledge and skills with “applied competencies” that adults actually use on the job.

That is far too big a job for high school teachers to tackle in their spare time. **Clearly, some organization with sufficient resources and good connections to both the K-12 and business community (perhaps the Office of Vocational and Adult Education in the U.S. Department of Education) should step forward and undertake what might be called an “R-Squared Curriculum Project”—an initiative to develop model curricula or replacement units that infuse workplace applications and problems with rigorous academic content.** The project might begin with mathematics and involve representatives from business and trades—such as the director of electrician apprenticeship program quoted above—alongside educators and curriculum specialists.

Truth-in-Labeling

Neither bottom-up school redesign strategies nor top-down policies to raise graduation requirements have had much success ensuring more effective

and more challenging teaching. **Many states are developing end-of-course standards and assessments to help deal with the problem, and that is a good start. But tackling the problem will also require other tools, including model or mandatory curricula, classroom benchmark assessments, curriculum-driven professional development, and elements common to the kind of instructional management systems some urban districts have used to improve elementary education. States or districts that choose not to require a mandatory classroom curriculum should consider at least providing “replacement units” and “anchor assignments”—smaller chunks of standardized curriculum that can help teachers make sure their teaching is aligned with high academic standards.**

Moreover, the toolbox should include methods of auditing high school curriculum content so that administrators can identify problems across classrooms and district officials can identify problems across schools. As Jean Rutherford of the National Center for Educational Accountability puts it, “While truth-in-labeling practices in the food industry ensure that orange drink cannot be labeled orange juice without legal ramifications, schools have no such safeguards in place. Algebra I can be placed on any child’s transcript without any guarantee about the content taught or learned.”⁷⁷

Research clearly shows that such efforts should pay particular attention to equity in access to rigorous course content for low-income and minority students. If such students don’t derive the full benefit of top-down and bottom-up efforts to improve preparation for college and work, the current high school reform movement will abet rather than abate social and economic disparities.

The 15-percent Solution

Few policymakers understand how unequally distributed the dropout problem is among the nation’s high schools, or the extent to which highly intensive and targeted solutions will be necessary to solve the problem in the nation’s 2,000 dropout factories.

Balfanz of the Talent Development team suggests that the federal government take the initiative to “fix the 15 percent of American high schools that produce 50 percent of the nation’s dropouts.”⁷⁸

The challenges facing these high schools are daunting: In many, the majority of entering freshmen arrive several grade levels behind and end up failing ninth grade. Stricter accountability is not the answer for these schools, Balfanz says. “You’re asking failing schools, many of which have already been targeted under state accountability systems, sitting on watch lists and reconstitution lists for more than a decade, to suddenly begin graduating nearly all freshmen with college-ready skills.”⁷⁹

He estimates that would take about \$1.5 billion a year to help such schools adopt strategies that have shown to be effective in Talent Development and other models—the same amount of additional funding the Bush administration requested for its own high school initiative in its fiscal 2006 budget. The initiative also could include funding for a large-scale research and development project using scientifically based methodologies to learn more about which reforms work best under what circumstances, helping to build an even better set of solutions that will benefit all high schools.

So far, the federal government is the only major player left out of the current high school reform movement. The White House made major high school reform proposals both last year and this, but the Administration’s focus on expanded testing has failed to garner much Congressional support. **A proposal that would pay for capacity-building in high poverty high schools, rather than yet more accountability, could help the White House gain back some credibility with powerful Democratic legislators. The proposal should have bipartisan appeal, since most congressional districts would get some funding, and a significant number of “dropout factory” high schools are located in the South and Southwest, which means funding would go to districts in “red states” as well as cities in the northeast.**

Conclusion

The current research on high school reform suggests two very powerful conclusions:

First, the American high school is not as impervious to change as many believe it to be. Both real change and real progress are possible, slow and difficult though they may be.

Second, the most significant improvements in high schools come from *combining* strategies and solutions long thought to be ideologically disparate or even mutually exclusive. Research suggests that more rigorous curricula and tougher graduation standards might not hurt graduation rates, and might even help improve them. Rigor and relevance are not zero sum tradeoffs, but actually work best in combination. Structural reforms and curriculum reforms are mutually reinforcing and produce larger gains in student performance when implemented together. Helping educators become more supportive of students, rather than merely indifferent to their success or failure, is critical, but doing so produces more significant improvements in student learning when combined with high expectations and rigorous instruction.

Leaders of the 2005 National Education Summit on high school reform in Washington, DC were right to put aside ideological differences over rigor versus relevance and other reform strategies. The research evidence is increasingly clear that reforming high schools requires overlapping solutions.

The challenge now becomes how to create the conditions that allow such solutions to flourish together and how to get them into the communities and high schools that need them the most. High school reform is achievable, but reformers must leave very little to chance to be successful.

Endnotes

¹ J. P. Greene and M. A. Winters, *Public High School Graduation and College Readiness Rates* (New York: Manhattan Institute for Policy Research, February, 2005). The rate does not include students who graduate later than expected or who earn a non-standard diploma such as the General Equivalency Diploma (GED).

² National Center for Education Statistics, *Digest of Education Statistics 2004*, published online at: <http://nces.ed.gov/programs/digest/d04>, data is from Table 137: http://nces.ed.gov/programs/digest/d04/tables/dt04_137.asp (United States Department of Education, 2005).

³ J. P. Greene and M. A. Winters, *Public High School Graduation and College Readiness Rates* (New York: Manhattan Institute for Policy Research, April, 2005).

⁴ M. Perie, R. Moran, and A. D. Lutkus, *NAEP 2004 Trends in Academic Progress: Three Decades of Student Performance in Reading and Mathematics* (Washington, D.C.: USDOE, National Center for Education Statistics, Government Printing Office, 2005).

⁵ E. Allensworth and J. Q. Easton, *The On-Track Indicator as a Predictor of High School Graduation* (Chicago: Consortium on Chicago School Research, 2005): 8.

⁶ An online version of the report can be found at <http://www.ed.gov/pubs/NatAtRisk/findings.html>.

⁷ T. Toch, *In the Name of Excellence: The Struggle to Reform the Nation's Schools, Why it's Failing and What Should be Done* (New York: Oxford University Press, 1991): 272.

⁸ These findings come from over a dozen published research studies. However, a useful recent summary can be found in V. E. Lee, "Important Issues for Research on High Schools" (2005). Paper presented at "Research on Improving High Schools: A Forum for Advancing the Research Agenda" in Washington, D.C., on May 5, 2005.

⁹ Brand new schools based on specific designs were compared both with their original "model schools" and with traditional, comprehensive high schools. High schools that had been "redesigned" into clusters of small learning communities were compared with a sample of schools that had been surveyed prior to being redesigned.

¹⁰ The National Evaluation of High School Transformation, *Creating Cultures for Learning: Supportive Relationships in New and Redesigned High Schools* (Washington, D.C.: American Institutes for Research April, 2005): 42.

¹¹ The National Evaluation of High School Transformation, *Executive Summary: Evaluation of the Bill & Melinda Gates Foundation's High School Grants* (Washington, D.C.: American Institutes for Research 2005): 4.

¹² The National Evaluation of High School Transformation, *Creating Cultures*: 45.

¹³ See, for example, D. D. Ready, V. E. Lee, and K. G. Welner, "Educational Equity and School Structure: School Size, Overcrowding, and Schools-within-Schools," *Teachers College Record*, 106 (October, 2004): 10. The authors found that "to varying degrees subunit choice permitted students to sort themselves based on their race, social class, academic backgrounds, and aspirations. Parallels to the stratification common to tracked high school curricula were striking. Academically motivated students tended to select subunits with reputations for academic rigor, while struggling students often chose subunits they thought had low academic and behavioral expectations. Moreover, some subunits were designed to attract certain types of students, including those with math or science themes and those with traditional vocational themes." (page 2007).

¹⁴ The National Evaluation of High School Transformation, *Rigor, Relevance, and Results: The Quality of Teacher Assignments and Student Work in New and Conventional High Schools* (Washington, D.C.: American Institutes for Research 2005): 43.

¹⁵ The National Evaluation of High School Transformation. (2005). *Rigor, Relevance*: 51 and 56. The percentages refer to student work samples judged to have the lowest of four levels of quality. The four levels were: "substantial," "moderate," "limited," and "little or none."

¹⁶ The National Evaluation of High School Transformation, *Executive Summary*: 8.

¹⁷ The National Evaluation of High School Transformation, *Executive Summary*: 8.

¹⁸ Quote is from Vander Ark's foreword to T. Wagner, R. Kegan, L. Lahey, R. W. Lemmons, J. Garnier, D. Helsing, A. Howell, H. T. Rasmussen, *Change Leadership: A Practical Guide to Transforming Our Schools* (San Francisco, CA: Jossey-Bass, 2006): xiii.

¹⁹ V. E. Lee, "Important Issues": 13.

²⁰ A. P. Carnevale, "Connecting the Dots Between High School, Postsecondary Education and Training, and Careers,": 24. Paper presented at "Research on Improving High Schools: A Forum for Advancing the Research Agenda" in Washington, D.C. on May 5, 2005.

²¹ D. Helfand, "A Formula for Failure in L.A. Schools," *Los Angeles Times*, January 30, 2006.

²² Quoted in E. Robelen, "Gates High Schools Get Mixed Review in Study," *Education Week* (November 16, 2005).

²³ J. Quint, H. S. Bloom, A. R. Black, and L. Stephens, *The Challenge of Scaling up Educational Reform Findings and Lessons from First Things First* (New York: MDRC, 2005). Overview.

²⁴ J. Quint, H. S. Bloom, A. R. Black, and L. Stephens, *The Challenge*: 20.

- ²⁵ See <http://www.earlycolleges.org>.
- ²⁶ K. K. Manzo, "Advanced Placement Courses Cast Wider Net," *Education Week* (November 3, 2004).
- ²⁷ The College Board, *Advanced Placement report to the nation*, (New York: 2006): 5.
- ²⁸ B. Kleiner and L. Lewis, *Dual Enrollment of High School Students at Postsecondary Institutions: 2002–03* (Washington, D.C., USDOE, NCES, Government Printing Office, 2005–008). See also T. Waits, J. C. Setzer, and L. Lewis, *Dual Credit and Exam-Based Courses in U.S. Public High Schools: 2002–03* (Washington, D.C., USDOE, NCES, Government Printing Office, 2005–009).
- ²⁹ D. Viadero, "Scholars Warn of Overstating Gains from AP Classes Alone," *Education Week* (February 15, 2006).
- ³⁰ S. J. Ingels, L. J. Burns, X. Chen, E. F. Cataldi, and S. Charleston, *A Profile of the American High School Sophomore in 2002: Initial Results from the Base Year of the Education Longitudinal Study of 2002* (2005). (Washington, D.C.: USDOE, NCES, Government Printing Office, 2005–338): v.
- ³¹ S. J. Ingels, M. Planty, and R. Bozick, *A Profile of the American High School Senior in 2004: A First Look—Initial Results From the First Follow-up of the Education Longitudinal Study of 2002 (ELS:2002)* (Washington, D.C.: USDOE, NCES, Government Printing Office, 2006–348): 6.
- ³² Achieve, Inc., and National Governors Association, *An Action Agenda for Improving America's High School* (Washington, D.C., 2005).
- ³³ Achieve, Inc., *Closing the Expectations Gap 2006* (Washington, D.C., 2006): 6.
- ³⁴ K. Carey, *One Step from the Finish Line: Higher College-Graduation Rates are within our Reach* (Washington, D.C.: The Education Trust, 2005): 2.
- ³⁵ S. Cavanagh, "Several States Making College-Prep Courses the Default Curriculum," *Education Week* (April 20, 2005): 1, 13.
- ³⁶ J. H. Bishop and Ferran Mane, "The Impacts of Career-Technical Education on High School Labor Market Success," *Economics of Education Review* (vol. 23, 2004): 381–402.
- ³⁷ V. E. Lee and D. T. Burkham, *Dropping Out of High School: The Role of School Organization and Structure*, Paper presented for conference "Dropouts in America: How severe is the problem? What do we know about intervention and prevention?" Harvard Graduate School of Education, (Cambridge, MA: January 13, 2001): 25.
- ³⁸ S. Plank, S. Deluca, and A. Estacion, *Dropping Out of High School and the Place of Career and Technical Education: A Survival Analysis of Surviving High School* (Columbus, OH: National Dissemination Center for Career and Technical Education, 2005).
- ³⁹ S. Cooney and G. Bottoms, *Middle Grades to High School: Mending a Weak Link* (Atlanta: Southern Regional Education Board, 2002): 9.
- ⁴⁰ San Jose Unified School District, *Inspiring and Preparing for Success: San Jose Unified's Report to the Community* (San Jose, CA: Fall, 2005). Graduation rates available at California Department of Education's DataQuest web site, <http://data1.cde.ca.gov/dataquest/>.
- ⁴¹ That course sequence is a somewhat stricter version of that recommended by *A Nation at Risk*, minus the half credit in computer science.
- ⁴² M. Roderick, E. Allensworth, and J. Nagaoka, *How do we get Large Urban High Schools to Care About Dropout Rates and Will No Child Left Behind Help or Hurt?* Paper prepared for the "Developmental, Economic and Policy Perspectives on the Federal No Child Left Behind Act" conference (Center for Human Potential and Public Policy, Harris School of Public Policy, University of Chicago, May 6, 2004) 37-38.
- ⁴³ T. Lewin and J. Medina, "To Cut Failure Rate, Schools Shed Students," *New York Times* (July 31, 2003): A-1.
- ⁴⁴ The studies are 1) R. J. Warren and K. N. Jenkins, "High School Exit Examinations and High School Dropout in Texas and Florida 1971-2000," *Sociology of Education* (April, 2005): 78, 122–143. 2) J. P. Greene and M. A. Winters, *Pushed Out or Pulled Out: Exit Exams and Dropout Rates in Public High Schools* (New York: Manhattan Institute for Policy Research, May, 2004).
- ⁴⁵ J. Greene, *Education Myths: What Special Interest Groups Want You to Believe About our Schools and why it isn't so* (New York: Rowman & Littlefield Publishers, Inc, 2005): 128.
- ⁴⁶ C. Adelman, *Answers in the Tool Box: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment* (Washington, D.C.: USDOE, Office of Educational Research and Improvement, 1999).
- ⁴⁷ E. C. Warburton, R. Bugarin, and A. M. Nuñez, *Bridging the Gap: Academic Preparation and Postsecondary Success of First-Generation Students* (Washington, D.C.: USDOE, NCES, Government Printing Office, 2001).
- ⁴⁸ C. Adelman, *The Tool Box Revisited: Paths to Degree Completion from High School Through College* (Washington, D.C.: U.S. Department of Education, Office of Vocational and Adult Education, 2006).
- ⁴⁹ G. Gamoran and E. C. Hannigan, "Algebra for Everyone? Benefits of College-Preparatory Mathematics for Students with Diverse Abilities in Early Secondary School" (*Educational Evaluation and Policy Analysis*, 22(3), 2000): 241-254.
- ⁵⁰ J. S. Cohen, "Colleges Find Many Lacking: Students Fall Short in Math, English and Put in Remedial Courses," *Chicago Tribune* (November 20, 2005).
- ⁵¹ J. B. Presley and Y. Gong, *The Demographics and Academics of College Readiness in Illinois* (Edwardsville, IL: Illinois Education Research Council, 2005). Last August the state increased its graduation requirements too, but the new requirements will not fully go into effect for some time.
- ⁵² J. B. Presley, B. R. White, and Y. Gong, *Examining the Distribution and Impact of Teacher Quality in Illinois* (Edwardsville, IL: Illinois Education Research Council, 2005).

⁵³ G. A. Hess and S. Cytrynbaum, "The Effort to Redesign Chicago's High Schools: Effects on Schools and Achievement," In V. E. Lee (Ed.), *Reforming Chicago's High Schools: Research Perspectives on School and System Change* (Chicago: Consortium on Chicago School Research, 2002): 36.

⁵⁴ Personal interview.

⁵⁵ The Education Trust—West, *Preparing LAUSD High School Students for the 21st Century Economy: We Have the Way, but Do We Have the Will?* (Oakland, CA: 2005): 2.

⁵⁶ California State University, "More California eleventh-graders volunteer to get 'early signal' of their readiness for college" (Press release. September 20, 2005). Retrieved February 12, 2006, from http://www.calstate.edu/PA/news/2005/EAP05_shtml.

⁵⁷ M. Sacchetti, "Colleges Question MCAS Success: Many in State Schools Still Need Remedial Help," *Boston Globe* (June 26, 2005).

⁵⁸ J. H. Bishop, *High School Exit Exams: When do Effects Generalize?* (Ithaca, NY: Cornell University Center for Advanced Human Resource Studies, 2005).

⁵⁹ R. C. Neild and R. Balfanz, *An Extreme Degree of Difficulty: The Demographics of the Ninth grade in Non-Selective High Schools in Philadelphia* (Paper presented at the annual meeting of the American Sociological Association, 2001).

⁶⁰ C. Shanahan, *Adolescent Literacy Intervention Programs: Chart and Program Review Guide* (Naperville, IL: Learning Point Associates, 2005): 2.

⁶¹ See http://www.mdrc.org/project_29_70.html for more details.

⁶² R. Balfanz, N. Legters, W. Jordan, *Catching up: Impact of the Talent Development Ninth Grade Instructional Interventions in Reading and Mathematics in High-Poverty High Schools* (Baltimore, MD: Johns Hopkins University April, 2004).

⁶³ R. G. Croninger and V. E. Lee, "Social Capital and Dropping out of High School: Benefits to At-Risk Students of Teachers' Support and Guidance," *Teachers College Record* (103, 2001): 548-581. See also V. E. Lee and D. T. Burkham, *Dropping out*.

⁶⁴ R. G. Croninger and V. E. Lee, "Social Capital."

⁶⁵ K. A. Kerr and N. E. Legters, "Preventing Dropout: Use and Impact of Organizational Reforms Designed to Ease the Transition to High School," In G. Orfield (Ed.), *Dropouts in America: Confronting the Graduation Rate Crisis* (Cambridge, MA: Harvard Education Press, 2004): 221-242.

⁶⁶ Lee and Burkham, *Dropping out*.

⁶⁷ Balfanz, Legters, and Jordan, *Catching up*: 2.

⁶⁸ Dynarski, M. (2004). "Interpreting the Evidence from Recent Federal Evaluations of Dropout Prevention Programs: The State of Scientific Research," In G. Orfield (Ed.) *Dropouts in America*.

⁶⁹ C. A. Lehr, M. F. Sinclair, and S. L. Christenson, "Addressing Student Engagement and Truancy Prevention during the Elementary School Years: A Replication Study of the Check & Connect Model," (*Journal of Education for Students Placed at Risk*, 9 (3), 2004): 279-301.

⁷⁰ R. Balfanz, and N. Legters, "Locating the Dropout Crisis: Which High Schools Produce the Nation's Dropouts?" In G. Orfield (Ed.), *Dropouts in America*: 72.

⁷¹ Balfanz and Legters, *Locating the Dropout Crisis*.

⁷² J. J. Kemple, C.M. Herlihy, and T. J. Smith, *Making Progress Toward Graduation: Evidence from the Talent Development High School Model* (New York: MDRC, May, 2005): ES-8.

⁷³ J. J. Kemple, C.M. Herlihy, and T. J. Smith, *Making Progress*: iii.

⁷⁴ Kemple, Herlihy, and Smith, *Making Progress*: ES-8.

⁷⁵ Balfanz and Legters, *Locating the dropout crisis*: 77.

⁷⁶ Carnevale, *Connecting the Dots*.

⁷⁷ Quoted in J. Dounay, *Ensuring Rigor in the High School Curriculum: What States are Doing*. (Denver: Education Commission of the States, January, 2006).

⁷⁸ Personal interview.

⁷⁹ Personal interview.