Improving Low-Performing High Schools: Searching for Evidence of Promise

Steve Fleischman and Jessica Heppen

Summary

Noting that many of the nation's high schools are beset with major problems, such as low student reading and math achievement, high dropout rates, and an inadequate supply of effective teachers, Steve Fleischman and Jessica Heppen survey a range of strategies that educators have used to improve low-performing high schools.

The authors begin by showing how the standards-based school reform movement, together with the No Child Left Behind Act requirement that underperforming schools adopt reforms supported by scientifically based research, spurred policy makers, educators, and researchers to create and implement a variety of approaches to attain improvement.

Fleischman and Heppen then review a number of widely adopted reform models that aim to change "business as usual" in low-performing high schools. The models include comprehensive school reform programs, dual enrollment and early college high schools, smaller learning communities, specialty (for example, career) academies, charter high schools, and education management organizations. In practice, say the authors, many of these improvement efforts overlap, defying neat distinctions. Often, reforms are combined to reinforce one another.

The authors explain the theories that drive the reforms, review evidence of their reforms' effectiveness to date, and suggest what it will take to make them work well. Although the reforms are promising, the authors say, few as yet have solid evidence of systematic or sustained success.

In concluding, Fleischman and Heppen emphasize that the reasons for a high school's poor performance are so complex that no one reform model or approach, no matter how powerful, can turn around low-performing schools. They also stress the need for educators to implement each reform program with fidelity to its requirements and to support it for the time required for success. Looking to the future, the authors suggest steps that decision makers, researchers, and sponsors of research can take to promote evidence-based progress in education.

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Improving the nation's high schools, particularly those that are low-performing, is a task whose challenges are far easier to catalogue than to surmount. Readers familiar with the current state of American high schools, and efforts to improve them, can cite their own favored grim statistics and stories that illustrate the extent of the problem. Many of those stories and statistics may be gleaned from companion pieces in this volume.

In this article we take a cautiously optimistic approach that highlights promising—but not proven—reform programs and strategies for turning around what many consider a failed education system. Our optimism is based on our own research review work, in which we have identified several comprehensive school reform models that we found to be demonstrating notable improvements, particularly in high-poverty, low-performing schools. As well, we are heartened by the increasing amount of evidence being produced through high-quality studies, including randomized trials. One example is the strong evidence of positive effects now available for career academies. Finally, we are impressed by the increase in options available to those interested in high school improvement. We leaven our optimism with a call for all reformers to consider the evidence and take into account the particular needs and circumstances they confront before adopting any models.

In this article we identify some approaches that *may* help to achieve the goal that all students will attend, stay and succeed in, and then graduate from high school well prepared for further learning, successful careers, and engaged citizenship. In particular, we focus on reforms targeted at the nation's lowest-performing high schools, although the same approaches could be used in many of the country's more than 18,000 high schools.

We begin by placing the search for effective programs to improve high schools within the context of the two-decade evolution of the standards-based reform movement, a movement that simultaneously exposed the flaws of the education system and helped policymakers and educators create a road map for improving it. With reformers constantly defining, demanding, and measuring better performance, educators set about imagining and implementing a variety of approaches to meet this goal.

Against the backdrop of standards-based reform, we review the promise of some leading reform models, such as comprehensive school reform, charter schools, and smaller learning communities. By model we mean a set of specified practices or ideas that have been, or are intended to be, replicated widely. Models typically have a group of coherent elements, driven by an expectation that these elements—when well executed—will accomplish a desired goal, such as to reduce dropouts or improve student achievement.

Some models are instructional in focus. "Ninth-grade academies," for example, provide special "catch-up" courses and curricula for students who arrive at high school academically unprepared. Other models, such as smaller learning communities, in a general sense seek to reform the way in which the high school is structured. Still others—such as charter schools, education management organizations, and some comprehensive school reform programs—focus at least in part on how schools are governed. In practice, many reform efforts overlap, defying neat distinctions. Often, reforms are combined to reinforce one another, as when a

charter high school seeks to be a small school, or introduces a ninth-grade-academy format and extends the school day or school year.

We identify some approaches that may help to achieve the goal that all students will attend, stay and succeed in, and then graduate from high school well prepared for further learning, successful careers, and engaged citizenship.

We explain the theories that drive these structural and programmatic reforms, review evidence of their effectiveness to date, and suggest what it will take to make them work well. When reviewing the evidence, we discuss its quality and quantity and point out any potential problems that make it difficult to draw conclusions regarding the effectiveness of an individual model or the class of intervention it represents.

We stress from the outset that no one reform model or approach, no matter how powerful, can turn around low-performing schools. The reasons for a high school's poor performance are complex and cannot be addressed piecemeal. Furthermore, as many experts have pointed out, school-based reform can have only limited effects on improving educational attainments and reducing societal inequalities. As a group of leading sociologists pointed out recently, narrowing the nation's education gaps "requires reducing poverty, as well as improving the schools that poor children attend."[1] Because no one reform can get the job done by itself and schooling cannot attain all the improved outcomes we seek, we hope that the efforts we review here will be seen as parts of the solution, to be used judiciously and in comprehensive reform efforts that give due consideration to the contexts in which the changes are implemented.

Understanding Improvement Options

By exposing the failure of the nation's school system to provide all students with acceptable levels of education, the assessment and accountability measures of standards-based reform—including those embodied in the No Child Left Behind Act (NCLB)—have served as a dynamic engine, driving the search for demonstrably more effective programs and practices for low-performing schools. The desire to find evidence-based solutions has been further energized by the NCLB requirement that underperforming schools adopt reforms supported by "scientifically based research."

Particularly in high schools, however, the search for and implementation of effective reforms are complicated by the many challenges that schools face, such as the low reading and math achievement of entering students, the high dropout rates, the growing numbers of English-language learners, the lack of safety in some schools, the inadequate supply of effective teachers in the neediest schools, and the intense focus and effort required to restructure complex organizations.

It is not surprising that in this environment a great many reform approaches have arisen, each promising to address the challenge of improving high schools. In this section, we review a range of reform models. Our

definition of "model" is intentionally loose and reflects our experience with how both education decision makers—such as school board members, superintendents, central office administrators, principals, and school staff—and federal and state policy makers think about their improvement options.

When decision makers consider effective reform approaches, they do not make the fine distinctions that researchers might make. Decision makers with whom we have worked over the past decade are much more eclectic in their consideration of options. Thus, they may at the same time explore whether to adopt a program such as First Things First, or an education management organization, or a homegrown professional-development initiative to promote greater literacy for entering high school students, or whether to split a large school into smaller academies or convert it into a charter school. In fact, NCLB may promote this eclectic approach by outlining five equivalent options for "restructuring" the schools that are most persistently the lowest performing.[2]

Our review of reforms is not exhaustive. Our selection of approaches to highlight is based on our research regarding key challenges faced in improving high schools and on our professional judgment regarding which options are most prevalent across the country and which models decision makers are most likely to consider in the coming years.[3] We have examined research on evidence-based reforms as well as "gold standard" research reviews produced by organizations such as the What Works Clearinghouse.

We seek to avoid the "either-or" thinking that often prevails in education. For example, reformers seeking to improve high schools need not choose between improved professional development or smaller schools. Furthermore, we argue that all schools must have strong curricula and instruction in place, as well as ways to meet the nonacademic social and emotional needs of students. Each model we review has strengths and limitations. A combination of several models may be needed for success. In our conclusion, we return to the need for coordinated systemic solutions.

Making Evidence Matter

More than ever, education decision makers considering reform approaches are asking two questions. Does it work? How do we know? As yet, the growth of evidence on the effectiveness of reform models has not caught up with educators' understandable desire to have multiple research-proven options. A number of randomized controlled trials, considered the "gold standard" in evaluation research, have already provided evidence regarding the promise of some approaches, such as career academies.[4] Other rigorous studies are now under way. Through our own work at the American Institutes for Research's Comprehensive School Reform Quality Center we have rated the quality and effectiveness of eighteen leading middle school and high school comprehensive school reform models and examined factors that may contribute to their success.[5] In addition, the What Works Clearinghouse continues to review evidence regarding the effectiveness of dropout-prevention programs and may focus on other high school topics in the future.[6]

But despite the encouraging growth of research on the effectiveness of high school reform models, the evidence is still quite limited both in quantity and quality. For example, in our report on middle and high school comprehensive school reform models, we identified more than 1,500 potential

studies to review; of these studies, only forty-two met our standards for quality and rigor. Even when studies are conducted using rigorous methods, judging a model's impact can be very difficult, given the complexity of the reform models, the variability of settings in which they are implemented, and the importance of implementation as a significant variable affecting outcomes. Furthermore, in many evaluations of school reforms, the measures used to evaluate the impact are not aligned with the outcomes that the reform model seeks to affect. An additional challenge is timing—school reforms are dynamic, and even the best research studies are able to capture them only at distinct points in time.

Recognizing the pressure to improve high schools and the current limits of the evidence base, we recommend that policy makers take a "best available evidence" approach to selecting from among viable alternatives. Policy makers should judiciously weigh existing rigorous evidence, along with other important considerations, such as the support that the model has in the local education community, the "readiness" of a school or district to incorporate a reform into other efforts already under way, and the commitment and ability of an external service provider or the district to provide the long-term implementation support necessary for success. In the end, ignoring rigorous evidence means risking disappointment, but waiting until "all the evidence is in" does not meet the urgently felt need for positive action.

Reviewing the Models

In what follows, we review a number of widely adopted approaches to changing "business as usual" in low-performing high schools. The models include comprehensive school reform (CSR) programs, dual enrollment and early college high school (ECHS), smaller learning communities, specialty (for example, career) academies, high school charter schools, and education management organizations (EMOs). Although these approaches represent many of the most prevalent whole-school efforts to reform low-performing high schools today, we stress that this is not a comprehensive review of all of the high school reform models available. For example, many dropout-prevention programs exist, and some, such as the Check & Connect program, show compelling evidence of effectiveness. Other programs focus on improving literacy (for example, supplemental literacy programs such as SRA Corrective Reading and Language! and literacy programs across content areas, such as the Strategic Instruction Model) and on reducing school violence (for example, Positive Behavior Supports). Other models have been locally developed.

These approaches vary widely in their assumptions about how they will bring about improvement. Few have solid evidence of systematic or sustained success. For example, high school CSR models—such as America's Choice, Coalition of Essential Schools, First Things First, High Schools That Work, Project GRAD, and Talent Development High Schools—present themselves to schools as effective programs. But in our 2006 review of leading middle and high school whole-school reform models (that includes those listed above), we found just five widely adopted models that we felt had a solid body of evidence regarding their effectiveness.[7]

To succeed, policy makers must match carefully the models they choose to the outcomes they seek to promote. To help orient readers and support policy makers' matching process, we propose a two-part decision-making framework. First, decision

makers should consider five outcomes that any chosen model should be designed in part, or in whole, to help achieve. Second, they should consider the instructional, structural, and governance elements within each model.

The five reform outcomes, drawn from research on secondary school reform conducted by MDRC, can be thought of as mediators of improvement.[8] Decision makers can use these five outcomes as a comprehensive road map for reform and as a way to consider which models help to meet their needs, singly or in combination.

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The first outcome is a personalized and orderly learning environment. Researchers have pointed out the importance of creating a school atmosphere that supports effective learning for all students. Such an atmosphere may be particularly important in large, comprehensive high schools where students can get lost in the crowd and thereby fail to receive the academic support they need. Impersonality may also contribute to behavioral problems and increased violence in schools. Efforts in this area are in line with the growing realization that successful schools focus on academic, as well as social and emotional, learning.[9]

The second outcome is the capability to assist students who enter high school with poor academic skills. Scores on the National Assessment of Educational Progress confirm that a significant percentage of students enter high school poorly prepared for academic success. Particularly troubling is weakness in the literacy and reading skills that form the foundation of most academic endeavors.[10] Almost all high school reform models recognize and seek to address these challenges.

The third outcome is improved instructional content and practice. Leading experts in standards-based reform consistently identify the lack of a strong instructional focus and effective practice as one of the central deficiencies in low-performing high schools.[11] The academically neediest students are often educated by the least well-prepared and least experienced teachers, in terms of teaching out-of-field and having fewer than five years of experience.[12] Some models reviewed below address this issue by providing new curricula and by offering extensive, targeted professional development.

The fourth outcome is the capability to prepare students for the world beyond high school. Many high schools are failing to prepare students well either for postsecondary education or for careers.[13] In today's global economy, students with only a high school education face far lower career earnings and greater chances of being unemployed than their college-educated peers.[14] Moreover, most of the good jobs being created in the new economy, particularly the best-paying ones, require postsecondary education. Some, but not all, of the models below address this desired outcome directly.

The fifth outcome is positive change in overstressed high schools. All high schools, being complex systems, are difficult to change. Low-performing schools offer all the

expected challenges of reforming an already complex organization, with the additional difficulty of having to do it in a setting with diminished administrative and instructional capacity and heightened physical disruption and psychological pressure. These challenges are often exacerbated by accountability demands and adverse publicity. Compared with reforming other schools, creating positive change in these low-performing schools may take more skilled leadership and time, greater moral and fiscal support from the district, efforts by external reform organizations, cultural changes in terms of expectations and behavior, and more staff learning of new habits, skills, and ways of doing things. Models reviewed below address the need to support change at the school level in a variety of ways, including by creating new or smaller schools.

In what follows, we describe reform models in ways that allow decision makers to compare how the models seek to achieve the five desired outcomes or mediators of improvement, what outcomes the models do not directly help to achieve, and whether the models do or do not now show evidence of effectiveness in helping improve high schools.

The second part of the decision-making framework involves the instructional, structural, and governance elements within each model. Models with strong instructional components focus on improving teaching and learning through refining a school's existing curriculum, introducing new and often more structured curricula, and providing professional development and other supports that enhance teacher quality. These models seek to strengthen both the content and delivery of instruction to provide a rigorous and relevant learning experience for all students.

Models with strong structural elements tend to focus their attention on how a school is organized to deliver educational services to students. Some model variants may, for example, extend instructional time in key subject areas, lengthen the school day or school year, create smaller learning communities within the larger school, reduce the size of the school, offer new ways to improve connections to the community, or break down the barriers between high school and college through strategies such as "dual enrollment."

Models with strong governance elements directly address the operations and management of schools and change how high schools are run—usually by creating new authority structures to run the schools. Leading examples of governance models are charters or third-party education management organizations that run schools. Changes often include personnel policies.

In practice, most models combine all three elements, but some focus predominantly on one. Because changes in all three may be required to achieve improved outcomes, decision makers should have clearly in mind which changes a model seeks to make and how well those changes align with local improvement plans. For example, high schools that struggle with student performance in particular areas such as literacy or mathematics should orient clearly toward improvement options with a strong instructional focus. High schools such as some of the nation's "dropout factories," which are struggling in all areas and are seeking to restore order, might consider models or third-party providers that address school governance. Finally, some of the lowest-performing high schools considering restructuring options might tend toward the primarily structural approaches, such as converting into smaller learning communities.

Characterizing models in this way gives decision makers a frame of reference that can help them match their most acute needs with potential solutions.

In what follows we provide summaries of a representative and illustrative set of high school reform options. For each, we indicate which of the reform elements (instructional, structural, governance) are typical features of the model, summarize its theory of action or approach to achieving the five desirable outcomes, and review the current evidence of its effectiveness.

CSR is intended to be systemic and to address every aspect of a school, from curriculum to scheduling to management to family and community involvement.

Although our comments regarding effectiveness are tentative, they are guided by the best available rigorous evidence and well-conducted evidence reviews. We rely heavily on the findings of several studies that we published in 2006 and 2007, which reported on systematic reviews of the evidence of effectiveness and quality of leading high school models and education management organizations. When the evidence base is still emerging, we point out the limits of what is known. In addition, although we seek to generalize the evidence of effectiveness of these models as a set or approach (for example, comprehensive school reform or specialized academies as a whole), individual programs that represent a model type vary widely in effectiveness. Thus, for example, one type of specialized academy may be much more effective than another. Policy makers should use the following information as a way to orient their thinking about which reform options to pursue. They should also keep in mind that effective reform involves programmatic and nonprogrammatic changes in schools and that these changes are often beyond the scope of any model.

Comprehensive School Reform

Comprehensive school reform came into being during the 1980s but grew in importance during the late 1990s with the support of Congress, which created the Comprehensive School Reform Demonstration Program (later the Comprehensive School Reform Program), and with the sponsorship of New American Schools.[15] Although not a centerpiece of No Child Left Behind, it nevertheless remains a reform approach that has the support of major foundations and remains of interest in the education community. One indication of its prevalence is that more than 5,000 schools had implemented the eighteen models that we reviewed in 2006.

Whether implemented with the support of an external provider or through the efforts of individual schools or districts, CSR is intended to be systemic and to address every aspect of a school, from curriculum to scheduling to management to family and community involvement. Its integration of research-based practices into a unified program is designed to give a school's reform effort coherence—instructionally, organizationally, and culturally—leading to improved student achievement. Depending on their design philosophy, individual representatives of this approach vary in the level of curricular or structural support that they provide to a school. With some exceptions, such as the

School Development Program described below, CSR programs typically do not change governance structures in the schools. Some of the best-known CSR high school programs are America's Choice, Coalition of Essential Schools, First Things First, High Schools That Work, Project GRAD, and Talent Development High Schools.[16]

As one might expect from its name, comprehensive school reform seeks to achieve all five of the desirable high school outcomes.[17] Individual CSR programs differ, however, in how they meet these objectives; our discussion illustrates the range of solutions that they provide.[18]

To achieve personalized learning environments, for example, First Things First features theme-based smaller learning communities that bring a core group of students and teachers together for all four years of high school. To meet the same objective, the Talent Development High Schools program creates both a "Ninth-Grade Success Academy" and career academies at the upper high school grades. The America's Choice program organizes its high schools into small schools and "houses."[19] Taking a different approach to meeting this same goal, the Coalition of Essential Schools focuses on helping schools design their own approaches—through professional development, the creation of learning communities, and so forth—to meet ten core program principles, including "personalizing teaching and learning."[20]

Talent Development's ninth-grade academies also serve as an example of how some CSR programs seek to address the needs of students who enter high schools with weak academic skills. These academies offer catch-up courses and a "Freshman Seminar" to support the development of academic and social skills necessary for high school success.[21] Another example is America's Choice, which offers "ramp up" courses in math and reading to accelerate progress for students who enter high school behind academically.[22]

CSR programs differ widely in whether they provide support to improve high school instructional content and practice. While many programs focus on professional development and creating teacher learning communities to improve instruction, few provide a curriculum. One model that does provide instructional content is America's Choice, which offers its own curriculum in reading, writing, and mathematics.[23] Another is the Talent Development High Schools, with the previously noted catch-up curriculum.

Talent Development High Schools and America's Choice also include "career academy" components intended to prepare students for the world beyond high school. In another approach, the High Schools That Work program merges the requirements for completing a college-preparatory academic core with those of completing a planned sequence of career courses or further academics. In this way, the program seeks to prepare students well for whichever postsecondary options they choose.

Leading CSR programs take a variety of approaches to help make positive change in low-performing high schools. In fact, many of these programs were created because reformers recognized that overstressed schools need external support to improve. Models provide such support in many ways. They provide training, professional development, change-process consulting, school-based coaching, and implementation visits. They promote innovative structures, such as academies or houses, and teacher professional learning

communities. They foster changes in structure, such as the introduction of block schedules, different forms of student assignment, and common planning time. Sometimes they foster changes in the way the schools are governed. For example, the School Development Program, created by James Comer, offers a structure and process for school improvement based on mobilizing teachers, administrators, and community members to support students' maturation along six developmental pathways: physical, cognitive, psychological, language, social, and ethical. Schools that adopt the program must alter their organization and governance to create three key structures to run the school: a school planning and management team, a student and staff support team, and a parent team.

Making overall statements about the effectiveness of CSR as an improvement approach for high schools is difficult. Nevertheless, several pieces of evidence suggest its promise.[24] Geoffrey Borman's 2002 meta-analysis of the evidence of effectiveness of twenty-nine leading CSR programs, including those operating at the high school level, synthesized 232 studies and concluded that the overall effects of CSR are significant and meaningful relative to effects of other interventions used in similar contexts.[25] Borman found that a significant factor in the strength of CSR models' effects is the maturity of the programs; that is, models in place for more than five years yielded the strongest effects. Because many experts believe that it is harder to improve high schools than elementary schools, we take a closer look at CSR outcomes at the high school level.

In our own 2006 systematic review of eighteen secondary CSR models, we gave four (America's Choice, First Things First, School Development Program, and Talent Development High Schools) a rating of "Moderate" in the category of "evidence of positive effects on student achievement." We derived this rating from our review of findings reported in studies in which we have confidence based on their research designs (that is, studies with comparison groups and longitudinal designs). In most cases, the findings reported in these studies are a mix of positive effects and no significant differences in student achievement for students in schools implementing these CSR models compared with students in schools that are not. It is important to note that a rating of "Moderate" is the second highest rating achieved by any of the nearly fifty models we have reviewed.[26] Given the difficulty of improving low-performing schools and the relative newness of some of these models, we consider the finding that four programs are moderately effective in raising student achievement to be promising evidence for high school CSR.

Despite its promise, though, some caution is necessary. Although four programs did receive a "Moderate" rating, we gave several other widely adopted programs a "Zero" rating, indicating that we could find no evidence that they had positive effects on student achievement.[27] Decision makers must therefore choose carefully among CSR program options. And even the most comprehensive of these programs has gaps that must be identified and addressed to provide an effective total package of reforms for a school.

Dual Enrollment and Early College High Schools

Dual enrollment programs allow high school students to take college courses and earn credits toward an associate's or bachelor's degree. Once available only to students performing well beyond grade level, today dual enrollment is becoming increasingly

popular as a way both to reach a wider pool of students who can benefit from college coursework and to decrease the need for remediation in college.[28] Research has shown that postsecondary success is predicated on both rigorous academic preparation and a clear understanding of the expectations in college. Thus, state policy makers are increasingly turning to dual enrollment to accelerate learning and to bridge the transition to postsecondary success after high school graduation.[29]

Making overall statements about the effectiveness of CSR as an improvement approach for high schools is difficult. Nevertheless, several pieces of evidence suggest its promise.

State and local dual enrollment policies vary substantially in terms of tuition and eligibility requirements, funding, and program characteristics. Dual enrollment is primarily a structural reform approach, in that its focus is on aligning systems in K–12 with postsecondary goals. Unlike traditional high schools, many schools with dual enrollment opportunities operate on college campuses (approximately 80 percent in 2005).[30] Other dual enrollment programs are implemented in high schools or through distance-learning providers.[31] These structural differences produce variations in the instructional elements of reform—specifically, in the ways that high school students receive college-level instruction, including taking classes at the high school taught by college-accredited teachers and taking classes directly at the college.[32] Finally, implementing dual enrollment programs can also involve a change in school governance. For instance, many dual enrollment high schools are also charter schools (for example, about one-third of schools participating in the Early College High School Initiative are charter schools), and the success of all dual enrollment programs requires partnerships with local community colleges and universities.[33]

Depending on their structure, dual enrollment programs seek to improve student achievement through all five of the desired outcomes for high school reform models. Most seek to create a personalized learning environment that is part of a college-going culture. For example, they often incorporate the use of "advisories" and other formal mentoring structures. Although some dual enrollment programs have entrance requirements, many assist students with poor academic skills by serving students who are traditionally underrepresented in postsecondary education.[34] To improve instruction and to prepare students for the world beyond high school (the third and fourth desired outcomes), the dual enrollment approach enables students to earn credits toward a high school diploma and toward a college degree concurrently, thus providing access to more rigorous curricula and instruction. By aligning the content and pedagogy with college expectations, the approach aims to help students become better positioned to succeed in college and beyond.[35] Finally, all of the reforms associated with implementing dual enrollment approaches seek to achieve the fifth desired outcome, eliciting positive change in overstressed high schools. In particular, implementation of dual enrollment programs emphasizes cultural changes in terms of expectations of students and adoption of new ways of supporting student success in increasingly challenging course settings.

No definitive evidence shows that dual enrollment programs are consistently achieving the objectives identified above, and there is not yet strong evidence of the overall effect of dual enrollment on student achievement and postsecondary outcomes. Correlational studies suggest that dual enrollment opportunities are associated with increased academic achievement and educational attainment.[36] For example, a U.S. Department of Education study reported in 2004 that earning college credits while in high school increases the likelihood of graduation and reduces the average time it takes to earn a college degree.[37] Because this study is a descriptive analysis of longitudinal data and does not include a control group, however, we have limited confidence in these findings, which may be explained by students' own self-selection into college credit–bearing courses while in high school.

Two specific dual enrollment programs that have been evaluated are middle college high schools and the Early College High School Initiative. Middle college high schools (MCHSs) are alternative high schools, located on college campuses, whose goal is to increase access to college among traditionally underrepresented students. They maintain small enrollments, aiming to personalize learning, and offer relevant, career-related course experiences to students. Instructional strategies include collaborative, peer-assisted learning groups, team teaching, and the use of alternative assessments, including portfolios.[38] One rigorous, experimental study evaluated a MCHS program implemented in the Seattle Public Schools in the early to mid-1990s.[39] The study found that dropout rates for students with access to the program were statistically equal to those of students in the control group (36 percent vs. 33 percent) and that a similar share of students in both groups earned a diploma or GED (40 percent vs. 38 percent). Based on this study, evidence is not strong that middle college high schools are effective at keeping at-risk students in school. However, it is worth noting that since the mid-1990s, the model has been revised and aligned with the early college high school model and to our knowledge, there are no newer or more definitive studies of current evidence of its effectiveness.

The Early College High School Initiative is a dual enrollment program developed by the Bill & Melinda Gates Foundation. Schools in the initiative adhere to an established set of core principles that includes providing students with the opportunity to earn up to an associate's degree or two years' worth of college credits toward a baccalaureate degree, finding public resources to cover the cost of the college credits, and rewarding mastery and competence in high school classes with enrollment in college-level courses. Targeting a student population that includes those who are traditionally underrepresented in postsecondary education, the initiative encompasses the broad goal of serving these students with more rigorous instruction, relevant curricula, and supportive relationships.[40]

A descriptive, longitudinal study is now examining the implementation and outcomes of this national initiative. The students attending the schools under study are recruited by the schools, all of which generally seek to enroll low-income students, students of color, and English language learners. Some of the schools have explicit selection criteria that include minimum (and maximum) achievement requirements for entrance.[41] Findings to date suggest that schools in the initiative are recruiting and enrolling low-income students and are serving student populations with minority compositions that exceed those of their feeder districts; however, survey

results also indicate that students attending early college high schools are more likely to have college-educated parents than the national average (in 2006–07, 33 percent of ECHS tenth-grade students had parents who graduated from college, compared with 17 percent of tenth-grade students on a nationally representative survey).[42]

The research also provides suggestive evidence that early college high schools can establish personalized learning communities involving students and teachers (based in part on high average attendance rates and other survey-based and qualitative measures of personalization). It also seems that students attending these schools are engaged academically and are taking college courses in sizable proportions, particularly in schools that are new "start-ups" (compared with those converted from existing schools) and schools that are physically located on the campus of a two- or four-year institution of higher education (compared with those not located on a college campus).[43] Because there is no comparison group, however, it is not possible to discern the extent to which the ECHS model as a whole produces positive outcomes for students. Students who attend these schools are clearly motivated to do so, as they self-select into the programs, and they would need to be compared to similarly motivated students not attending ECHSs to generate stronger evidence of effectiveness. Despite a lack of definitive evidence, the national-level descriptive studies of this widespread and growing high school reform model provide useful information about implementation and trends over time.

In general, dual enrollment programs are now widely used to increase access to college courses for a broader range of high school students. Exposing students, particularly at-risk students, to college campuses and college-going culture can potentially ease the transition to postsecondary education, as well as improve outcomes for students while they are still in high school. Although the full benefits of these programs are as yet unknown, the continued study of specific programs such as middle college high schools, early college high schools, and other programs that operate in states across the country should provide a clearer picture of the extent to which and the conditions under which dual enrollment approaches achieve the five desired outcomes of high school improvement.

Smaller Learning Communities

Smaller learning communities (SLCs) include a variety of school redesign initiatives intended to create smaller theme-based units of organization, including schools within schools, academies within buildings, and free-standing small schools. These communities include structures such as freshman academies organized around career interests or other themes, "houses" in which small groups of students are taught by a cadre of core-subject teachers and remain together throughout high school, and semiautonomous schools within a school.

This approach to high school reform is primarily structural in focus, although it can result in governance and instructional changes. Smaller learning communities are formed in differing ways, depending on funding sources and political and physical constraints. While small learning environments have many structural variations, among the most common and practical approaches is to divide an existing large high school into small units. These "conversion" strategies include schools within schools, which often take the form of subprograms within a host school, and schools within a building, such as

academies with career themes or curricular focus areas. The autonomy over scheduling, staffing, and budgeting varies for conversion SLCs. In some cases, even schools within a building can have their own principal; in other cases, administrators are shared. A free-standing small school is typically located in its own building and has its own principal and autonomy over budget. There is no universal agreement about the optimal size for small high schools, but free-standing small schools usually enroll fewer than 600 students.[44] Unlike redesigned large high schools broken into smaller units, free-standing small schools are often started up from scratch, typically beginning with one grade (for example, ninth grade) and adding grades over time. Furthermore, in many cases, high school reform into smaller learning communities also includes or emphasizes an instructional element. For example, the establishment of these communities with themes may require curricular reform that includes a shift in content and pedagogy.

The U.S. Department of Education's Smaller Learning Communities program, authorized under NCLB, awards grants for up to sixty months to local education agencies to plan and implement SLCs in high schools with more than 1,000 students. A recent report on schools in the first cohort (a total of 119 schools first funded in 2000) shows that the SLC structures most commonly implemented are freshman and career academies, followed by non-themed schools within schools.[45]

Of the five desired outcomes of high school improvement, personalization is the primary goal in creating SLCs. The underlying rationale is that the educational experience for students—particularly at-risk students—will improve when they attend smaller, more intimate schools where they feel known and cared for by their teachers and become more engaged in learning. While SLCs take many different structural forms, all share the objective of personalization for high school students. Personalization strategies enacted in the 119 schools in the federal SLCs program include the use of individual assessments, integration of a cooperative learning focus into the curriculum, mentoring programs such as teacher advisories and formal mentoring, and interdisciplinary teaming.[46]

Although changing the school structure to create a more personalized learning environment is a primary objective of SLCs, achieving this outcome is intended to be a catalyst for the other four desired outcomes for high school improvement. The idea is that changing the culture by decreasing the size of high schools will create the enabling conditions for schools and teachers to provide better supports for students who enter below grade level, to improve instruction, and in so doing, to better prepare students for postsecondary success. Together, these reforms are designed to elicit positive change in overstressed high schools (the fifth outcome), by promoting structural and cultural changes in low-performing high schools.

Some evidence is emerging that students in small high schools do experience benefits. Research on small schools over the past two decades generally indicates that smaller high schools can achieve the goal of personalization. Findings, from mostly descriptive and matched comparison studies, indicate that SLCs can provide more personal learning environments that reduce alienation of students and teachers, increase school safety, improve working conditions for teachers, and foster greater student engagement in school.[47]

Some studies suggest encouraging findings about the benefits of SLCs on student achievement outcomes, while others suggest mixed or even negative results.

Consistent with these findings, an analysis of seven-year trends among schools participating in the federal SLC program suggests positive trends in terms of student participation in extracurricular activities and ninth-grade promotion rates and downward trends in school violence, disciplinary action, and the use of drugs and alcohol.[48] The research further suggests that the size of the high school matters most for minority and low-income students.[49] In particular, several studies of high schools redesigned into SLCs in large U.S. cities—including Chicago, Baltimore, Boston, and New York—have reported improvements in school climate, culture, and student attitudes and short-term student outcomes including ninth- to tenth-grade promotion, in comparison with students in large comprehensive high schools.[50]

However, the effect of implementing SLCs on student achievement, graduation rates, and postsecondary success has not been definitively established with rigorous research. Two primary challenges emerge from a review of the evidence regarding the effect of school size on these student outcomes. First, many of the studies on school size are correlational in design, often based on large national databases. These studies may use sophisticated methods, but they are unable to remove the possible bias that results from the facts that students and teachers self-select, rather than being assigned randomly, into schools and programs and that attrition from these programs is also nonrandom. Second, as noted, SLC is not a single program but rather a term that represents a variety of possible approaches, often in combination with other reform strategies, making it difficult to make overall statements regarding effects. So, although the research suggests that creating smaller learning environments can, indeed, foster more personalization, a definitive link from these changes to effects on student achievement in SLCs has not been clearly established with rigorous research.

Given these limits in the research, some studies suggest encouraging findings about the benefits of SLCs on student achievement outcomes, while others suggest mixed or even negative results. For example, a recent study in New York City reports that students in the New Century High Schools were more likely to graduate on time than students citywide.[51] Another recent evaluation of the formation of SLCs through the "Focus on High Schools" initiative in Boston Public Schools uses an interrupted time series design to examine outcomes for students before and after implementation of the initiative, over a twelve-year period. The key features of the initiative are the breaking down of Boston's twelve large comprehensive high schools into "educational complexes" of SLCs and a curricular and instructional focus on English and language arts. The estimated effects showed positive trends over time for outcomes related to student engagement such as absences, suspensions, and ninth- to tenth-grade promotion. But language arts and mathematics scores on the Massachusetts

Comprehensive Assessment System tests actually declined relative to the projected trend in the absence of the initiative.[52]

The Bill & Melinda Gates Foundation, among the many supporters of high school redesign strategies that focus on reducing school size, has invested more than $900 million in improving U.S. high schools since 2001. The foundation's High School Grants Initiative has provided grants to intermediary organizations tasked with redesigning existing schools and starting new high schools. Small school size is considered in this program to be a "necessary but not sufficient" condition for creating effective learning environments for students. A comparative, longitudinal evaluation of the initiative from 2001 through 2005 demonstrates that, as the foundation expected, implementing new schools is easier than converting existing schools. That is, free-standing small schools that start up from scratch seem better able to create conditions for learning that are consistent with the attributes of high-performing high schools than are schools within schools or schools within buildings that are converted from large, comprehensive high schools. Findings from this research indicate that students in foundation-supported new schools, but not in redesigned schools, exhibited positive trends (in attendance and in ninth- to tenth-grade progression rates). With some exceptions, however, average test scores in both new and redesigned high schools remained below district averages.[53] These findings are similar to those in the Boston study and were also replicated in a longitudinal evaluation of foundation-supported small school reform in Baltimore City Schools. There, students at new (called "innovation") schools outperformed comparison students in conversion high schools and large comprehensive high schools on state assessments in English and algebra.[54]

The evaluation of the foundation's High School Grants Initiative suggests, consistent with other research, that explicit attention to implementing instructional changes is vital to the effectiveness of SLCs.[55] This finding is echoed and emphasized in a recent report to the Gates Foundation that synthesizes current research and discusses the challenge of converting large high schools to SLCs.[56] It may be that instructional change is particularly difficult to achieve when large high schools are converted into smaller high schools, and this may partly explain why conversion SLCs are less likely to succeed.

It is important to note that the implementation of SLCs is a key program feature in several of the comprehensive reform models reviewed above, including Talent Development, First Things First, and High Schools That Work. Thus, the results demonstrated in evaluations of these models may be, at least in part, attributed to the use of SLC structure as a fundamental element. However, no study has established the contribution that SLCs make to the outcomes of comprehensive school reform models.

Specialty Academies

The formation of specialty academies, including career academies and academies with a curricular focus such as science, technology, engineering, and math, is often part of a structural change into SLCs. The units that result from downsizing a large, comprehensive high school often are formed around particular themes, although in many cases students and teachers are able to cross SLC boundaries. For the purpose of distinguishing this approach to high school reform from SLCs more broadly, we define specialty academies here as schools that are largely self-contained and committed to the career or curricular theme, so that most of the

experiences of the students are related to that theme. However, it is worth noting that most schools implementing SLCs are using career academies as their model.[57] Specialty academies are most focused on making changes to the instruction and structure of schools.

Specialty academies are designed to achieve nearly all of the five desired outcomes of high school improvement. In particular, they seek to create personalized learning environments, often with small enrollments and stable student-teacher groupings across grades. They also seek to address instructional content and pedagogy, focusing on particular curricular areas with increased rigor in some cases (for example, STEM academies, which feature science, technology, engineering, and math), and increased relevance in others (for example, career academies). This approach perhaps most specifically seeks to address directly the challenge and desired outcomes of preparing students for the world beyond high school, both for postsecondary education and for the world of work. Some types of specialty academies do include components of support for students who enter high school with poor academic skills; however, it is important to note that, depending on their eligibility and selection policies, selective academies may not address this desired outcome.

Career academies as a program have been in existence since 1969 and are now operating in more than 2,500 schools in the United States.[58] Career academies operate as a school-within-a-school structure, where students have the same teachers across grades, teachers have common planning time to share in decision making, and students take at least one occupational course each year related to their academy's career theme. Partnerships with local businesses are a key feature of career academies. Local employers provide internship opportunities for students and help schools in developing curricula for occupational courses.

A relatively strong body of evidence is available for the effect of career academies on student outcomes. Studies (mainly quasi-experimental) conducted between 1985 and 2000 suggest that students in career academies outperform non-academy students on measures of academic success in high school, although differences in postsecondary education and employment are less consistently positive and statistically significant.[59] However, it is important to note that these studies, although they use analytic techniques to control for observed differences between academy and non-academy students (for example, prior achievement), are not based on random assignment of students to career academies. For example, studies by David Stern and several colleagues found that students attending ten career academies in California posted higher attendance and grades, earned more credits, and were more likely to stay in school than matched comparison students.[60] Using propensity score matching, Marc Elliott, Lawrence Hanser, and Curtis Gilroy reported similar findings in a comparison of students in different types of academies located in large cities.[61] Although the outcomes after high school examined in this research are mixed, some positive findings reported in some studies include higher participation in postsecondary education for academy students, lower rates of college remediation, and higher rates of bachelor's degree completion, compared with statistically similar non-academy students.[62]

Because of its rigorous research design using random assignment, we have high confidence in the findings reported in a fifteen-year-long

evaluation of career academies conducted by James Kemple at MDRC.[63] In the early years of the study, the researchers found that the career academies model provided students with more support, career guidance, opportunities to take technical classes, and work experience than the schools attended by students not in career academies. Retention rates among high-risk students were higher among career academy students compared with their counterparts while still in high school. Although no effect was found on achievement scores while students were in high school or on postsecondary education attainment after high school, the analysis of long-term labor market outcomes reveals significant effects. The ten- and fifteen-year follow-up reports indicate that career academies produced positive and sustained effects on labor market outcomes, particularly for young men. Young men—even those at the highest risk of dropping out of high school—who attended career academies posted earnings 18 percent higher than non-academy students four years after they left high school. Eight years after leaving high school, career academy students (women and men) earned 11 percent more than non-career academy students; for men, real earnings for academy students were 17 percent higher (earnings were $3,731 higher per year on average over the eight-year period) than those for non-academy students.[64]

Based in part on the findings reported in MDRC's experimental, longitudinal study of career academies, the What Works Clearinghouse review of the effectiveness of career academies as a dropout-prevention intervention in 2006 concluded that the career academies model has "potentially positive" effects on staying in school and progressing in school but "no discernible effects" on completing school.[65]

Thus, promising evidence shows that the career academies approach can improve outcomes for students, particularly in the longer term. Not much evidence yet exists, however, on the potential effect of other types of specialty academies in attaining the goals of improving instruction in high schools and preparing students for the world beyond high school.

Thus, promising evidence shows that the career academies approach can improve outcomes for students, particularly in the longer term.

Charter Schools and Education Management Organizations

Charter schools and education management organizations (EMOs) epitomize an approach to improvement that focuses on how schools are run. Their approach suggests that, by altering their governance, schools will have greater opportunities to make required instructional and structural changes that can lead to improvement. The approximately 900 charter high schools[66] around the country reflect this approach, which is focused on governance reform and most directly addresses the desire to bring positive change to overstressed high schools.

The underlying rationale for charter schools is that autonomy and flexibility in governance, and the creation of market competition among schools, will allow charter schools to develop the attributes of effective schools.

Public charter schools are exempt from many state regulations but are held accountable for improving student achievement. This means that charter schools generally have greater fiscal control, more discretion over hiring and firing of teachers and school staff, and more freedom to implement programs (such as those reviewed in this chapter) than do traditional public high schools. In exchange for these exemptions, charter schools have agreements or contracts with state-approved authorizing agencies that make explicit the schools' accountability to demonstrate improved student achievement.[67]

Although charter high schools vary extensively in focus and operation, many share a mission that, in theory, addresses nearly all five desired outcomes for high school improvement. To foster a personalized and safe learning environment, many charter high schools are small in size and use strategies such as advisory programs to support students and improve student engagement. Often located in inner cities, charter high schools' primary goal is typically to create a safe environment for learning that provides social and academic support for traditionally underserved students.

EMOs are either for-profit or nonprofit education organizations that contract with new or existing public, charter, or private schools and school districts to provide comprehensive services to schools. These services include, but are not limited to, educational programming and administrative services. Educational programming includes curriculum design, professional development, and tools for student assessment. Administrative services include operation-management (for example, student enrollment, school marketing), financial management (for example, payroll assistance, budget oversight), facilities management (maintenance and use of facilities), and human resources management (hiring and training staff, staff benefits). Many of the services provided by EMOs are comparable to those offered by whole-school improvement providers, such as comprehensive school reform models.[68] EMOs are included in this discussion because they often run charter schools and, in addition, often manage low-performing schools for districts. Although not all charters are run by EMOs and EMOs do more than run charters, charters and EMOs share in common the fundamental premise that schools will be more successful if they are governed differently.

Many EMOs focus narrowly on administrative operations, but some take a more comprehensive approach and also address some or all of the five desired outcomes defined earlier. For example, the organizational structure of Edison's Whole School Management model is designed to create small, flexible schools within schools, known as academies ("Senior Academies" for students in grades nine to ten; "Collegiate Academies" for students in grades eleven to twelve), for the purpose of fostering a more personalized environment.[69]

Charter high schools and EMOs vary widely in the extent and ways in which they assist students who enter high school with poor academic skills. Charter high schools often implement strategies to involve parents and community members, some of whom become part of tutoring and mentoring programs.

Vast differences exist in how charter high schools and EMOs address explicitly the curriculum and instructional challenges that must be met to achieve the goal of improving content and pedagogy in high schools. Some charter high schools seek to make the

instruction rigorous, relevant, and innovative; many struggle to meet this goal.[70] Many charter schools implement other whole-school reform models. As noted, about one-third of current schools participating in the Early College High School Initiative are charter schools.[71]

Some EMOs do not address content and pedagogy at all; instead, they focus squarely on improving how the school is run. Other EMOs do address classroom practice. The Edison School design, for example, includes curricular programs, either selected or developed by Edison, for all core academic subjects. In the Senior Academy, curricula are designed to prepare students for advanced placement (AP) courses that are offered in the Collegiate Academy. To prepare students for college, Edison partners with Princeton Review to focus on SAT or ACT preparation and provides college and career counseling.

Research comparing outcomes of charter school students with those of students attending traditional public schools is emerging, but studies on the overall effectiveness of charter high schools are lacking. For example, a study on California charter high schools finds that, after adjusting for enrollment size and student characteristics, charters that are "classroom based" score higher than non-charters on performance indicators, including the percentage of students proficient or above on the California High School Exit Exam in English and Math.[72] These findings are suggestive but not at all definitive because students self-select into the charter schools, and factors other than their charter school experience may explain their higher performance.

As with the other models we discuss, charter schools come in many forms. An important question, therefore, is what features of charter high schools are likely to produce positive outcomes for students. A recent analysis of charter high schools took on this question by identifying schools with good track records in terms of graduating students who go on to postsecondary success. The analysis reports that successful charter high schools seem to maintain a focus on higher education and foster a safe, orderly learning environment and positive school culture.[73] The practices observed in these high-performing charter high schools are aligned to all five desired outcomes of high school improvement; however, it is important to note that this study sample is small and has no comparison group.

As with charter high schools, we lack definitive evidence about the effectiveness of EMOs as a whole for high school improvement. Through the Comprehensive School Reform Quality Center, we conducted a systematic review of the effectiveness and quality of seven widely implemented EMO models, five of which serve students in K–12 and none of which exclusively serves high school students. Our rating for the overall effectiveness on student achievement of the EMO Edison Schools was "Moderate."[74] The rating was derived in part from our review of a five-year quasi-experimental evaluation of Edison Schools conducted by RAND, which reported mixed results for reading and math achievement for Edison School students compared with students not in Edison Schools.[75] We stress that our rating applies to Edison's K–12 model and none of the studies we reviewed isolated the effects of Edison Schools on high school student outcomes. The other six models in our review of EMOs received a rating of either "Zero" or "No rating," both signifying a lack of strong research that demonstrates positive effects on student outcomes. Therefore, we conclude that, as a

whole, there is not yet reliable evidence that EMOs can have a positive impact at the high school level.

Although it is as yet impossible to assess the effectiveness of charter high schools and EMOs in improving high school student outcomes, including achievement and postsecondary success, both approaches are important options for education decision makers to consider. By focusing on school governance, charter high schools and EMOs can address head-on the organizational and institutional capacity issues of low-performing high schools, thereby potentially stimulating change in overstressed high schools, the fifth desired outcome in high school improvement.

Implementation Is Crucial

One piece of evidence regarding research-based reform is probably more consistent and may be more important than all the others. Implementation is a critical factor in reform success. This observation may seem so obviously a matter of common sense that it hardly needs to be stated or supported with evidence. But educators, for all their good intentions, habitually defy both the strong research evidence and the common sense behind this observation by implementing education reforms with neither the fidelity nor the long-term support required to allow them to succeed and sustain themselves.

The authors of a recent large-scale synthesis of research concerning the implementation of evidence-based practices and programs across a number of industries and social service arenas observe that it is often more difficult to implement an effective model successfully than to design it.[76] This observation points not only to the difficulty of implementation but also to how crucial it is in getting good results.

Furthermore, a program or practice is worth implementing only when it is likely to have the desired results. Again, this may seem obvious, but anyone who has spent any time in the education arena has heard people observe that "If you do *anything* well, you will get results." But as the authors point out, "Desired outcomes are achieved only when effective programs are implemented well."[77]

The field of CSR lends further support to the need to implement programs with fidelity and then to support them for the time required for their success. In their recent multiyear, quasi-experimental study of CSR implementation and impact involving 650 elementary and middle schools in twenty-one districts across seventeen states, Daniel Aladjem and several colleagues found a positive relationship between the level of fidelity of implementation and the level of student achievement.[78] The study identified several conditions associated with higher achievement gains among the CSR study schools than their matched comparisons. CSR must be implemented with high fidelity to the model generally, fidelity must be high during later years of the model's introduction, and fidelity must be consistently high across the numerous model components and not just in a few.[79]

The finding that implementation fidelity is a significant factor for success should not obscure a number of important considerations. Amanda Datnow and Sam Stringfield have pointed out that, based on their review of the findings of sixteen studies and more than 300 school case studies conducted from the mid-1980s into the late 1990s, implementation of external reform models is a complex process, which requires the model providers to work together with schools and districts to "co-construct" the reform's implementation.[80]

No model is adopted wholesale and implemented in exactly the same way in all locations. Simply put, implementation is not a mechanical process but an adaptive one that must be conducted taking due account of the structural, financial, political, and cultural environments of each school and district.

Taken together, these studies offer significant policy lessons. First, precious time and resources will be wasted by selecting ineffective models to improve high schools. Some models are likely to be more effective than others, regardless of the contexts in which they are implemented. However, the models that are most likely to have significant impact in any given situation are those effective models that engender the commitment of school and district staff and leaders. Finally, once effective models are selected and implemented at schools, additional time and resources will be wasted by failing to give them the time and support they need to succeed.

Conclusion: Evidence-Based Models Are Necessary but Insufficient for Change

Overall, evidence for the effectiveness of the high school improvement models we have reviewed is sparse. There are, however, glimmers of hope. Some models have an emerging evidence base of effectiveness, and more research is under way that can help to identify the models and approaches that demonstrate the most promise. But having solid, research-based evidence of model effectiveness is just the first step in improving high schools. The second, and equally important step, is to implement effective models with care and with fidelity to the requirements of the models. Finally, improving high schools requires taking a holistic view—focusing simultaneously on the desirability of a number of outcomes and recognizing that high schools can be improved not by adopting piecemeal programs or actions but through systemic, coordinated action that may involve combining many approaches.

Looking to the future, we suggest steps that decision makers, researchers, and sponsors of research can take to promote evidence-based progress in education. We believe that decision makers should demand rigorous evidence of effectiveness before they consider a model for widespread adoption. They can get this evidence by consulting reliable third-party review organizations, such as the What Works Clearinghouse, or by seeking advice directly from researchers and organizations with expertise in judging research quality. If, as is likely, no models or approaches under consideration have strong evidence of effectiveness, decision makers should implement programs on a pilot basis—and engage in a rigorous evaluation of effects—before proceeding to widespread scale-up.

Researchers should join with decision makers in helping to design and execute small-scale, cost-effective tests of promising models. They should also design larger studies that create the types of planned variation in the implementation of models that make it possible to identify program elements that seem particularly critical to success. Identifying these critical elements would help to assure fidelity of implementation to the "required" elements of the model and those areas available for "co-construction" in which individuals implementing the model have greater leeway to experiment. These planned variations will also produce the evidence necessary to design future, more effective models.

Finally, sponsors of research should consider funding the types of studies suggested above.

They should also commit resources to long-term funding of a stream of research that can result in more definitive answers about which models do work, under what conditions, and for which types of students.

Although the knowledge base regarding promising strategies and programs to improve high schools is stronger today than ever before, it is still not yet robust enough to truly promote evidence-based practice in high school reform. Over the coming years, policy makers must continue to demand, and researchers to supply, better evidence. If they do, we believe that high school students will be able to look toward a brighter future.

Endnotes

1. Alan R. Sadovnik and others, "Sociological Perspectives on NCLB and Federal Involvement in Education," in *No Child Left Behind and the Reduction of the Achievement Gap: Sociological Perspectives on Federal Education Policy,* edited by Alan R. Sadovnik and others (New York and London: Routledge, 2008), p. 361.

2. Center on Education Policy, *Managing More than One Thousand Remodeling Projects: School Restructuring in California* (Washington: Center on Education Policy, February 2008).

3. See, for example, Comprehensive School Reform Quality Center, *Works in Progress: A Report on Middle and High School Improvement Programs* (Washington: Comprehensive School Reform Quality Center, American Institutes for Research, January 2005); and Chris Dolejs and others, *Report on Key Practices and Policies of Consistently Higher Performing High Schools* (Washington: National High School Center, American Institutes for Research, October 2006).

4. James J. Kemple, *Career Academies: Long-Term Impacts on Labor Market Outcomes, Educational Attainment, and Transitions to Adulthood* (New York: MDRC, June 2008).

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6. "Dropout Prevention" section of the What Works Clearinghouse (ies.ed.gov/ncee/WWC/reports/topic.aspx?tid=06 [accessed March 3, 2008]).

7. Comprehensive School Reform Quality Center, *CSRQ Center Report on Middle and High School CSR Models* (see note 5).

8. Janet Quint, *Meeting Five Critical Challenges of High School Reform: Lessons from Research on Three Reform Models* (MDRC, May 2006). This framework and the number of models used to develop it were further expanded by MDRC researchers in a brief produced for the National High School Center. Corinne M. Herlihy and Janet Quint, *Emerging Evidence on Improving High School Student Achievement and Graduation Rates: The Effects of Four Popular Improvement Programs* (Washington: National High School Center, American Institutes for Research, November, 2006). Many of the same challenges were identified by the CSRQ Center; see CSRQ Center, *Works in Progress* (see note 3).

9. See for example, CASEL Update, "The Benefits of School-Based Social and Emotional Learning Programs: Highlights from a Forthcoming CASEL Report" (Chicago: Collaborative for Academic, Social and Emotional Learning, December 2007).

10. CSRQ Center, *Works in Progress* (see note 3), pp. 45–49.

11. Jennifer O'Day, "NCLB and the Complexity of School Improvement," in *No Child Left Behind and the Reduction of the Achievement Gap,* edited by Sadovnik and others (New York and London: Routledge, 2008), pp. 27, 40, 46.

12. American Institutes for Research, *Research Retrospective: Teacher Quality Research in 2007* (Washington: American Institutes for Research, n.d.), pp. 2, 5. Tricia Coulter, "Implementing NCLB: State Plans to Implement the Challenge of Equitable Distribution of Effective Teachers," in *America's Challenge: Effective Teachers for At-Risk Schools and Students,* edited by Carol A. Dwyer (Washington: National Comprehensive

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13. See for example, C. Rouse, "Labor Market Consequences of an Inadequate Education," paper presented at the Symposium on the Social Costs of Inadequate Education, Teachers College at Columbia University, September 2005. Available at: http://devweb.tc.columbia.edu/manager/symposium/Files/77_Rouse_paper.pdf [July 28, 2008].

14. U.S. Department of Labor, Bureau of Labor Statistics, "Annual Averages—Household Data: Employment Status of the Civilian Noninstitutional Population 25 Years and Over by Educational Attainment, Sex, Race, and Hispanic or Latino Ethnicity," *Employment and Earnings* 52 (2005): 204; U.S. Department of Labor, Bureau of Labor Statistics, "Usual Weekly Earnings of Wage and Salary Workers: The Second Quarter 2008" (Washington: Bureau of Labor Statistics, July 2008); Thomas J. Kane and Cecelia E. Rouse, "Comment on W. Norton Grubb: 'The Varied Economic Returns to Postsecondary Education: New Evidence from the Class of 1972,'" *Journal of Human Resources* 30, no. 1 (Winter 1995): 205–21.

15. The term "comprehensive school reform" (CSR) is often used interchangeably with "whole school reform." For further background on comprehensive school reform, see: www.csrq.org/aboutcsr.asp [July 28 2008].

16. *CSRQ Center Report on Middle and High School CSR Models* (see note 5), pp. 25–26.

17. It is interesting to note that, despite their comprehensiveness, none of four CSR programs (ATLAS Communities, First Things First, High Schools That Work, Talent Development High Schools) reviewed by the CSRQ Center in its report on programmatic responses to key "hot topic" issues in high schools featured a formal violence-reduction component. CSRQ Center, *Works in Progress* (see note 3), p. 79.

18. The *CSRQ Center Report on Middle and High School CSR Models,* cited above (see note 5), provides detailed reviews of each of the models mentioned in this chapter. In addition to rating their evidence of effectiveness in five key outcome domains of interest to policymakers, the report provides a thorough summary of the program's mission, goals, costs, organization and operation, and key considerations regarding its implementation. These reports are available online at www.csrq.org/MSHSreport.asp [July 28, 2008].

19. *CSRQ Center Report on Middle and High School CSR Models* (see note 5), p. 51.

20. Ibid., p. 68.

21. Quint, *Meeting Five Critical Challenges of High School Reform* (see note 8), pp. 10, 30–32.

22. *CSRQ Center Report on Middle and High School CSR Models* (see note 5), pp. 53–54.

23. Ibid., pp. 52–54.

24. Overall statements are made difficult because of the wide array of individual CSR programs that take different approaches to improvement, because the evidence of effectiveness for the overall CSR approach is often provided for grades K–12 without differentiating the high school outcomes, and because no meta-analysis has been undertaken of outcomes for all schools using high school CSR programs.

25. G. D. Borman and others, *Comprehensive School Reform and Student Achievement: A Meta-Analysis* (Baltimore: Center for Research on the Education of Students Placed at Risk, Johns Hopkins University, 2002),

p. 34. Another recent large-scale study of CSR, conducted at the elementary school and middle school levels, also concluded that, when well implemented, CSR models experience higher academic achievement gains than comparison schools. D. K. Aladjem and others, *Models Matter: The Final Report of the National Longitudinal Evaluation of Comprehensive School Reform* (Washington: American Institutes for Research, September 2006), p. 6.

26. To arrive at its ratings, the center weighed the strength and quality of a program's evidence of effectiveness and the size of the overall impact as computed from the studies that met the center's standards. For more on the center's approach to program rating, see the *CSRQ Center Report on Middle and High School CSR Models* (see note 5), pp. 17–20.

27. Ibid., pp. 20–21.

28. M. M. Karp and others, *State Dual Enrollment Policies: Addressing Access and Quality* (Washington: U.S. Department of Education, Office of Vocational and Adult Education, 2004).

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32. M. Martinez and S. Klopott, *The Link between High School Reform and College Access and Success for Low-Income and Minority Youth* (Washington: American Youth Policy Forum and Pathways to College Network, 2005).

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34. A. Berger and others, *2003–07 Early College High School Initiative: Emerging Patterns and Relationships* (Washington: American Institutes for Research and SRI International, 2008).

35. N. Hoffman, *Add and Subtract: Dual Enrollment as a State Strategy to Increase Postsecondary Success for Underrepresented Students* (Boston: Jobs for the Future, 2005); National High School Center, *Findings from the Early College High Schools Initiative: A Look at Best Practices and Lessons Learned Regarding a Dual Enrollment Program* (Washington: American Institutes for Research, 2006).

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