U.S. High School Curriculum: Three Phases of Contemporary Research and Reform

Valerie E. Lee and Douglas D. Ready

Summary

Valerie Lee and Douglas Ready explore the influences of the high school curriculum on student learning and the equitable distribution of that learning by race and socioeconomic status. They begin by tracing the historical development of the U.S. comprehensive high school and then examine the curricular reforms of the past three decades.

During the first half of the twentieth century, the authors say, public high schools typically organized students into rigid curricular "tracks" based largely on students' past academic performance and future occupational and educational plans. During the middle of the century, however, high schools began to provide students with a choice among courses that varied in both content and academic rigor. Although the standards movement of the 1980s limited these curricular options somewhat, comprehensive curricula remained, with minority and low-income students less often completing college-prep courses.

During the 1990s, say the authors, researchers who examined the associations between course-taking and student learning reported that students completing more advanced coursework learned more, regardless of their social or academic backgrounds. Based largely on this emerging research consensus favoring college-prep curriculum, in 1997 public high schools in Chicago began offering exclusively college-prep courses. To address the needs of the city's many low-performing ninth graders, schools added extra coursework in subjects in which their performance was deficient. A recent study of this reform, however, found that these approaches made little difference in student achievement.

Lee and Ready hypothesize that "selection bias" may explain the divergent conclusions reached by the Chicago study and previous research. Earlier studies rarely considered the unmeasured characteristics of students who completed college-prep courses—characteristics such as motivation, access to academic supports, and better teachers—that are also positively related to student learning. Although the Chicago evaluation is only one study of one city, its findings raise the worrisome possibility that the recent push for "college-prep for all" may not generate the improvements for which researchers and policy makers had hoped.

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For well over a century, practitioners and policy makers have grappled over the fundamental purposes of secondary education. At the center of these discussions lies the fact that as adolescents move through the educational system, the focus of schooling typically shifts from developing individual children toward preparing students to be future workers and citizens. This acknowledgment of students' imminent adult roles raises serious questions about the appropriate content of secondary education. All *children* should learn to read, but do all *employees* need trigonometry? Since the emergence of the comprehensive high school in the late 1800s, two rival philosophical camps have offered quite disparate answers to this question. These opposing views dispute the extent to which students' future social and economic roles should determine their academic experiences in high school. Should all students be exposed to the same academic material, or should curricula reflect students' interests, abilities, and potential adult occupations? Who should make such decisions—parents, schools, or the students themselves?

In this article we present an interpretive review of recent research on the high school curriculum and its effects on student outcomes. After briefly describing the historical development of high school academic structures, we focus on the contemporary high school curriculum. The narrative of curriculum reform over the past three decades has, in one sense, been quite consistent. It can be characterized as a general movement to narrow curricular offerings and to infuse more rigor into the academic experiences of all high school students. We organize this review around three phases of research and reform. We conceptualize Phase I as part of the broader standards-based reform movement predominant during the 1980s, which required students to complete more courses in core subjects to earn a high school diploma. Although the reforms of the 1980s produced lasting curricular change in the nation's public high schools, research during this period focused more on policy implementation and on the politics behind the adoption of legislation than on the consequences of the reforms for student outcomes. Studies that did examine the link between state graduation standards and student learning typically were methodologically weak. For example, such studies seldom considered that a great deal of variability in both student course-taking and student learning lies within rather than between schools.[1]

Phase II shifted the focus from how many courses students should take to which courses students should complete. In many ways, Phase II can be seen as a more sophisticated research effort that examined naturally occurring variation in the concentration and rigor of academic course-taking both within and across schools and school districts. Methodologically stronger than the research in Phase I, the Phase II research began with comparisons of course-taking and student learning in public and Catholic high schools. The finding from these studies—that student achievement growth was higher in Catholic schools, where students generally follow a college-prep curriculum—was then extended beyond cross-sector comparisons as researchers explored how course-taking differences within public high schools affected student achievement, as well as the equitable distribution of that achievement by student social background. This body of research is now beginning to have a direct impact on educational policy.

The thrust of Phase III, now in its infancy, has been to implement reforms based on the findings of Phase II research by requiring high schools to provide only college-prep courses. An ancillary aspect of this reform model is that initially low-performing students may be required (or urged) to take a "double-dose" of coursework in subjects in which their incoming performance is deficient. Although this reform phase is growing fast at the state level, research on its effects remains scarce. Thus, our discussion of Phase III centers on the implementation of the new policy in a single location: the public high schools of Chicago. Research evaluating this curricular reform in Chicago is emerging, and one of the authors (Lee) is part of the evaluation team. Although other states and districts are moving in this direction, Chicago is in the vanguard of Phase III reform, and recently available data make such research possible.

Brief History of the High School Curriculum

As secondary school attendance became nearly universal over the past century, public controversies regularly erupted about the fundamental purposes of secondary education. The controversies centered on basic issues of what students should learn, whether all students should learn the same thing, and who should make decisions about such matters. On one end of this philosophical continuum was the belief that all students—regardless of their academic or occupational futures—should experience intellectually challenging coursework that prepares them equally well for college or work. This more custodial view of curriculum held that students' academic needs were quite similar and that their current aspirations or interests should be a secondary concern to schools. A formal statement of this view was issued in 1893 by the Committee of Ten, a national commission studying high schools that was headed by Charles Eliot, then president of Harvard University.[2] The Committee of Ten suggested that students should be permitted little curricular choice and that all high schools should offer a narrow academic curriculum that did not differentiate students heading for work from those bound for college.

Cardinal Principles of Secondary Education, published twenty-five years after the Committee of Ten's report, was perhaps the antithesis of the earlier treatise.[3] According to "social efficiency," the philosophy underlying the Cardinal Principles, secondary school students' coursework should be driven by their future occupational and educational plans. Schools should offer a broad and diffuse curriculum, one that included a wide range of academic and vocational offerings that varied not only in content but also in rigor. Supporters of social efficiency argued that offering only traditional academic courses overlooked two essential facts about high school students: they enter high school with different academic skills, and they aspire to disparate occupational futures. Advocates of the Cardinal Principles considered that requiring all students to complete academic courses was inequitable, in that it ignored students' social realities.[4] Psychologist Edward L. Thorndike declared that a high school should "have in mind definitely the work in life its students will have to perform and try to fit them for it."[5]

The social efficiency argument came to dominate the organization of public high schools during the first half of the twentieth century.[6] Comprehensive high schools represented the "social machine" through which adolescents' diverse backgrounds and skills would be matched to society's needs.

College-bound students completed an academically oriented course of study, whereas students bound for work were directed to courses preparing them for vocations and trades. This "differentiated curriculum" thus contained different courses for different students, whom the schools typically organized into vocational, general, and academic "tracks" that determined their coursework. The prevailing educational philosophy was that "high schools would serve democracy by offering usable studies to everyone, rather than dwelling on academic abstractions that would interest only a few."[7] Supporters of this curriculum organization also maintained that a "relevant" curriculum would increase student interest and motivation, leading more students to remain in school until graduation.

Movement toward Student Curricular Choice

The tracking process that matched students to courses remained quite stable for at least four decades. During the 1960s, however, the ways in which high schools sorted students began to evolve.[8] Rather than rigid curricular tracks that dictated which courses students would take, high schools slowly implemented more flexible structures that relied on student curricular choice.[9] Whereas traditional tracking placed students into predetermined courses and permitted little movement between academic, general, and vocational programs, the new approach allowed students to choose among dozens (or even hundreds) of courses and to create their own courses of study based on their future plans, interests, abilities, and motivation. Despite the elimination of formal tracking, the differentiated curriculum remained in place, and students' academic experiences continued to vary substantially within the same school.[10] As one author noted, "The curriculum remained stratified, but the logic of the strata became submerged."[11] Expansion of choice-driven curricula continued throughout the social upheavals of the late 1960s and early 1970s. Drawing on justifications similar to those put forth in *Cardinal Principles,* many high schools created courses deemed more "relevant" to students' lives, especially to the lives of racial and ethnic minority youth.[12] Organizations as politically varied as black militants and business roundtables agreed that students' social and academic diversity required curricular differentiation.[13]

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We now refer to this choice-driven academic structure as the "comprehensive curriculum," which comprises many sets of courses aligned both vertically and horizontally.[14] Vertically aligned courses share similar titles, but differ in difficulty (and often substance). For example, many high schools permit students to select among three distinct levels of eleventh-grade U.S. history: regular, honors, and Advanced Placement. Horizontally aligned courses are those through which students advance year by year. Once students complete prerequisite courses, they can decide how many years they will study a foreign language or whether to take calculus or physics (which few school districts require). As such, although stratified curricula remain in the comprehensive high school,

students are permitted to track *themselves* through their choice of courses, deciding which levels of courses to complete and how far to advance through the curriculum.

Phase I: The Standards Movement

The comprehensive high school (and its differentiated curriculum), which had enjoyed widespread support during the 1960s and 1970s, began to experience intense public scrutiny during the early 1980s. The emergence of the standards movement coincided with publication of the landmark study *A Nation at Risk*.[15] The report's scathing assessment of U.S. public high schools focused on a perceived lack of academic rigor. Its central theses were economic: first, that U.S. competitiveness was tied directly to the quality of public education and, second, that the educational foundation of the U.S. economy was "being eroded by a rising tide of mediocrity."[16] The educational free markets that characterized the comprehensive high school curriculum drew an especially sharp critique. The report charged that most secondary schools offered "a cafeteria style curriculum in which the appetizers and desserts can easily be mistaken for the main courses."[17] The report recommended that all high school graduates complete what it called "the New Basics": a minimum of four years of English and three years each of mathematics, science, and social studies. In this sense, *A Nation at Risk* echoed many of the sentiments expressed by the Committee of Ten almost a century earlier. The report's recommendations, as well as the curriculum reforms that emerged from it, represented the start of a cultural shift away from the social efficiency argument—the notion that students' social and academic diversity required different academic experiences—toward a counter-argument for a more common academic high school curriculum.[18]

State Curricular Reform Initiatives

Motivated partly by the charges leveled in *A Nation at Risk*, states engaged in education policy making as never before. Indeed, education reform became the central legislative activity of state governments during the 1980s.[19] Between 1983 and 1987 alone, state allocations for public education increased 21 percent.[20] The most common state reform initiatives of the 1980s involved an expansion of the number of courses (particularly in core subjects) required to obtain a high school diploma.[21] From 1980 to 1993, the average number of credits required to graduate increased from 17.3 to 19.8.[22] Many states viewed these stronger graduation requirements as the most direct means of increasing the rigor of secondary schooling. States often justified the new requirements by citing the notion of "opportunity to learn"—students cannot learn academic material to which they have not been exposed.[23] By the close of the 1980s, forty-five states had strengthened high school graduation requirements.[24] Their efforts found broad public support and were quickly adopted,[25] in part because they were relatively easy to implement—the teachers, classrooms, and courses they required were already largely in place.

The new, more stringent curriculum standards did not influence all students equally. They did not target (and rarely affected) course-taking among college-bound students, most of whom surpassed the standards even before their adoption. But they had considerable impact on non-college-bound students. For example, enrollment in vocational courses declined considerably during the 1980s, whereas participation in core academic courses and the arts increased. Comparisons of random samples of high school transcripts gathered in 1982 and 1987 suggest a 17 percent increase in the number of

mathematics credits completed (from 2.54 to 2.98 courses), and a 20 percent increase in science credits (from 2.19 to 2.63 courses) during the five-year period.[26] Roughly one-quarter of students completed an extra year of mathematics, and one-third completed an extra year of science by the end of the decade.

These Phase I curricular reforms targeted the number of credits students earned and (ostensibly) the subject matter of courses associated with those credits. However, the mandates often allowed school districts to decide which courses met the requirements or even which students were required to meet the standards.[27] Many students were permitted to earn credits for courses in subjects that were non-academic or consisted of low-level or even remedial content.[28] For example, Pennsylvania considered that "business math" fulfilled a core mathematics requirement.[29] Within schools, multiple levels of the same course often satisfied the same requirement, even though the courses often differed substantially in both content and rigor. Thus, the increased graduation requirements constituting Phase I reform likely influenced academic rigor only marginally. In fact, the majority of new courses that high schools added to their curricula were at basic, general, or remedial levels. The move seemed understandable, however, given that the new requirements were mainly targeted at low-achieving students. One scholar summarized these efforts as "a national experiment in offering lower-level academic courses to middle- and low-achieving students who previously took something else (vocational courses, various electives)."[30]

Phase I Research

Research on these Phase I reforms often focused more on the extent to which they effected fundamental educational change rather than on whether and how they influenced student learning. In general, the standards movement demanded "more of the same"—more courses, more days of school each year, and more hours of school each day. In this sense, the mandates entailed quantitative rather than qualitative changes to the high school curriculum.[31] They rarely focused on school restructuring or classroom teaching and learning.[32] Indeed, the curricular standards movements may have affirmed rather than transformed educational practice; students, teachers, and schools were simply asked to do more of what they were already doing.[33] Despite the clear limitations of these Phase I efforts, the curricular reforms associated with the standards movement remain largely in place more than twenty years later—a rare feat in the history of education policy making. Along with expanded use of standardized testing and increased (and more equitable) education funding, tougher graduation requirements may be the most lasting and important element of the larger standards-based reform movement.

Researchers have offered various explanations for the popularity and longevity of these Phase I reforms. From the standpoint of successful policy implementation, these legislative efforts reinforced norms and notions already held by parents, teachers, and students, and they legitimated the activities in which schools were already engaged. By contrast, initiatives that seek to fundamentally transform teaching, learning, and content are quite difficult to implement and sustain.[34] Reforms that assume that improving student performance requires only additional exposure to the "treatment" are likely to garner wide support, because they demand little real change—from either students, parents, teachers, schools, districts,

or local and state governments. Phase I reforms assumed that contemporary approaches to teaching and learning were adequate; increasing learning simply required that students become more deeply engaged with these processes. Schools and districts were generally quite comfortable with the approaches and content that the standards required. Perhaps most important, teachers retained the ability to craft their own instruction, and teacher autonomy—a central appeal of the profession to its practitioners—was preserved.[35]

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Phase II: Research on the Constrained Academic Curriculum

Although the Phase I reform efforts instituted somewhat tougher graduation requirements, they left the differentiated curriculum essentially intact. One result was that the strong links between student socio-demographic background and course-taking also remained. During the 1990s, more than 80 percent of high school students in the top third of the household income distribution completed geometry, compared with only 46 percent of students in the bottom third of the income distribution. Likewise, 30 percent of students in the top income category completed trigonometry, compared with only 10 percent of low-income students.[36] Comprehensive high schools thus continued to be internally segregated and stratified.[37]

Beginning in the 1980s, academic researchers and education advocates mounted concerted and unified attacks on curricular differentiation.[38] A host of studies criticized the free-market curricular structures that typified most public high schools.[39] The studies, which generally used qualitative methods to examine small numbers of high schools, did not seek to quantify the relationship between course-taking and student outcomes. Rather, they focused on curriculum structures, how students were matched to courses within those structures, and the relationship between course-taking and student social and academic background. Unlike many Phase I studies, this Phase II research recognized that a great deal of variability in course-taking lies within schools and that student curricular choice generally increases variability in students' academic experiences. These studies maintained that stratification in course-taking was partly related to the fact that high-achieving and motivated students (often guided by their parents) more often sought demanding teachers and courses. Conversely, social and institutional pressures, combined with the well-established links between social background and academic performance, often guided minority and low-income students toward low-level academic courses.[40]

Clearly, minority and low-income students are less likely to enroll (or be enrolled) in upper-level courses. An important question, however, is whether these relationships are the result of bias on the part of school personnel or are simply the consequence of links between academic achievement, socio-demographic background, and course-taking. In other words, are these course-taking patterns among socially disadvantaged students caused by unjust school practices, or are they appropriate given the lower average

achievement among low-income and minority students? Several quantitative studies conducted during the 1970s and early 1980s attempted to isolate these interconnected relationships. The authors generally agreed that measured achievement was the strongest predictor of curricular placement, but diverged on the extent to which race and social class effects on course-taking remained after adjustments for student achievement.[41]

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Apart from the fairness or appropriateness of curricular placements, many of these Phase II studies argued against differentiated curricula, simply because they included courses with modest levels of academic rigor and low expectations for student performance. The authors maintained that such courses should not be available to students, regardless of their academic abilities. The free-market curriculum structures operating within the typical "shopping mall high school," they argued, allowed students to select the path of least academic resistance and to decide how deeply to engage the academic content of high school.[42] As one study concluded, "Adolescents care about things they have to care about, and they do not have to care about academic engagement very much."[43]

Other researchers reported that teacher effort varied as well. In some classrooms, when low student and teacher expectations coincided, "treaties" resulted; teachers agreed to pass students if they were not disruptive, and students agreed to be cooperative if teachers demanded little effort from them.[44] This system was described as the "conspiracy for the least," meaning "the least hassle for anyone."[45]

An emerging research consensus favored a narrower, more academic, and more universal secondary school curriculum. John Goodlad proposed "a common core of studies which students cannot escape."[46] Other well-known writers, including Mortimer Adler in his *Paideia Proposal,* argued for the complete elimination of the differentiated curriculum.[47] The century-old normative questions of "who should learn what" resurfaced. Politically disparate groups that had previously coalesced behind broad curricula now found fault with the resulting stratification of students' opportunities to learn. In a rare example of cooperation, business leaders—interested in maintaining international competitiveness—and progressive academics and activists—concerned about educational inequality—collectively challenged the curricular differentiation that had pervaded the U.S. comprehensive high school for almost a century. In the ensuing decade, these authors and advocates would find empirical support for their conjectures, bolstered by new data and analytic techniques that allowed researchers to better estimate the links between course-taking and student learning.

Cross-Sector Comparisons

During the late 1980s, researchers began to examine associations between course-taking and achievement using new analytic

techniques and data. One strand of this research was conceptualized within a school-effects framework, focusing on curriculum structure as one element of school academic organization. The work began with comparisons of the effectiveness of Catholic and public high schools. A host of studies reported that not only were average achievement gains greater in Catholic schools, but relationships between students' social background and their achievement gains were weaker: Catholic schools were associated with increases both in excellence and in equity.[48] One explanation for these findings was straightforward: the "constrained academic curriculum" required in most Catholic high schools. Students in Catholic high schools generally complete challenging courses of study regardless of their academic and socioeconomic backgrounds or their plans for the future. Unlike comprehensive public high schools, Catholic high schools generally organize their curriculum in line with the custodial Committee of Ten recommendations—a rigorous, narrow academic program that is followed by all students.[49] These schools decide what all their students should learn, based on the philosophy that virtually all students should gain the same high-level knowledge. The ability to offer such a curriculum reflects a general consensus among adults about what is best for students—the unwritten idea being that high school students are not always competent judges of their long-term interests.

Beyond Sector Comparisons

The research linking student course-taking to the social distribution of student outcomes was extended from comparisons of Catholic and public high schools toward a broader and more general focus on curriculum structures. Findings from these studies were relatively consistent: students attending high schools offering a constrained academic curriculum—one with few remedial courses and with most (or all) students following a college-preparatory course sequence—learned more, and the learning was more equally distributed by race and ethnicity and by social class.[50] Several Phase II studies conceptualized curricular pathways as "pipelines," measuring how far students progressed through the mathematics and science curriculum in their school (for example, Algebra II versus trigonometry; biology versus physics). Even after one adjusts for student social and academic background, students who completed the more advanced courses exhibited higher achievement gains.[51]

Although neither the sector comparisons nor the curriculum-effects studies were experimental (the "gold standard" research design), many studies used large and nationally representative samples of high schools and students and analyzed the data with multilevel statistical methods (that is, students were "nested" within schools).[52] Moreover, these studies adjusted for many pre-existing differences in student characteristics, including prior achievement, student race and ethnicity, and social class. Thus, the Phase II research was methodologically stronger than research evaluating the Phase I reforms. Although the conclusions about the high school curriculum in both Phase I and II studies favored more rigor in students' courses of study, the form that "more rigor" should take differed considerably. Whereas Phase I research focused on adding more required courses in core subjects, Phase II studies focused on which courses students should (and should not) take. Moreover, Phase I studies drew few conclusions about what should be available within the high school curriculum from which students could choose, whereas Phase II studies suggested

that student choice should be constrained—fewer non-rigorous courses should be available, and remediation should take a different form. Clearly, a course sequence consisting of consumer math, pre-algebra, and Algebra I is quite different from a diet of Algebra I, geometry, and Algebra II. If many undemanding and remedial courses are available in a school's curriculum, some students will choose such courses and others will be counseled into them.

An additional consideration is that all Algebra I courses are unlikely to contain identical academic content. The Phase II studies cited above generally used nationally representative samples of high schools and drew their information about what courses students took either from students' high school transcripts or from self reports. The content of the courses—beyond their course titles—was unavailable in the data used for these studies. Clearly, it is possible that course titles could change to sound more rigorous, but course content could remain undemanding. Different forms of research, including field studies that examine the content of courses with similar titles (for example, Algebra I), would be required to explore this possibility.

Where Do Phase I and Phase II Curriculum Studies Lead?

The conclusions drawn from the Phase II studies seemed to lend support to universalizing the constrained academic curriculum in the nation's public high schools. Explicitly or implicitly, the research concluded that requiring college-preparatory coursework for all students would lead to many desirable outcomes: student achievement would improve, stratification of achievement by students' social background would decrease, and all students would be better prepared to go to college. Despite their methodological sophistication compared with the Phase I research, the Phase II curriculum-effects studies cited here were typically conducted using data from public comprehensive high schools, which offered a diffuse curriculum and considerable student choice. As such, these Phase II studies were not experimental in design: students were not randomly selected but instead were self-selected into particular courses from within a broad and differentiated curriculum. Moreover, the schools also selected which courses to offer, typically based on several criteria: state and district mandates, as well as the interests, future plans, capabilities, and demonstrated achievement of the students and families they served (that is, supply responds to demand). The ways in which students are selected into courses turn out to have important implications for the Phase II research. We address the validity of drawing inferences for universalizing the high school curriculum from the Phase II studies in the following section.

Phase III: "College Prep for All" in Public High Schools

Worldwide, demands for greater investments in human capital development are raising once again the broad historical question of the relationship between students' academic experiences in high school and their future economic roles. Changes in the U.S. and world economies, increased demand for college, and a set of relatively consistent findings from research about the high school curriculum have led policy makers and informed citizens in the past decade or so to call for even more rigor in what all American students should learn in high school to prepare students for the workforce of the new economy. There is general agreement that too few students, especially those from socially disadvantaged backgrounds, graduate from high school. Even among students who

graduate, many do so without the high-level skills needed for college and for the contemporary workforce. Increasingly, policy makers have come to recognize that the skills students need to succeed in the workforce are no different from the competencies needed to succeed in college and that undemanding coursework is insufficient to prepare students for a successful life after high school.

A key element in this policy shift is the recommendation that high schools offer only college-preparatory courses and that they eliminate remedial courses. With such a curriculum, all high school students—regardless of their academic records, current interests, motivation, or post–high school plans—would follow a college-preparatory curriculum. Although our focus in this article is on the U.S. high school curriculum, other industrialized countries are moving in a similar direction. Several European countries, such as the United Kingdom and Germany, which have traditionally supported tracking both within and between schools, have begun to question such policies as global economic structures call for better prepared workers.

High School Curriculum Reform in Chicago

The U.S. policy thrust toward a universal college-preparatory curriculum has begun to influence high school curricula across the nation. New York tightened its graduation requirements in 2001, Texas did so in 2003, and both states now mandate that all high school students complete a college-prep course sequence.[53] Thirteen states now require a college-prep curriculum, and sixteen more plan to adopt such requirements in the near future.[54] One large urban school district, Chicago, took action more than a decade ago.[55] In 1997, the Chicago Public Schools (CPS) reformed the high school curriculum based on the philosophy of "College Prep for All." Not only are all Chicago high school students now required to take four years of English and three years of mathematics, science, and social science (reforms following the spirit of the Phase I reforms), but they are also required to take particular courses in core subjects: Algebra I, geometry, and Algebra II in mathematics; survey literature, American literature, European literature, and world literature in English; biology, earth science, and chemistry or physics in science; world studies, U.S. history, and one elective in social sciences. Reformers have also dramatically expanded the number of Advanced Placement courses offered in the upper grades and—quite important in the Chicago context—eliminated remedial courses.

Many students in Chicago, however, enter high school unable to succeed in the ninth-grade college-prep courses. In response, in 2003 CPS instituted a policy that requires additional support classes in reading and mathematics for incoming ninth graders who score below national norms on standardized tests in those subjects at the end of eighth grade. Qualifying students—close to half of all incoming ninth graders—are automatically enrolled in the support courses in addition to the regular ninth-grade English and mathematics courses. These low-performing students get, in essence, a "double dose" of required coursework in mathematics or English, or both. Students receive credit for the support courses, although the courses do not count toward graduation requirements. For the purposes of this article, we consider this type of curriculum policy—a college-prep curriculum for all students, expanded AP offerings, support courses in ninth grade, and the suspension of remedial courses—as Phase III of curriculum reform. Although such a

curriculum has long been available to some students in many high schools, what differentiates this phase of curriculum reform is its universality—all students in these public high schools must follow essentially the same curriculum.

Evaluating "College Prep for All" in Chicago High Schools

A team of researchers from the Consortium for Chicago School Research (CCSR) and the University of Michigan has received generous multi-year federal grants from the U.S. Department of Education and the National Science Foundation to evaluate this curriculum reform in Chicago. The first evaluation—the only one we know that examines outcomes of Phase III high school curriculum reform—has focused on the ninth-grade classes (Algebra I and survey literature). We provide some detail about the evaluation in this article, because it is not yet available to readers in published form.[56]

Here we briefly describe the analysis of how enrollment in the two ninth-grade college-prep courses has influenced a broad array of student outcomes. The research team could not use an experimental design for its evaluation, because all students received the "treatment." Rather, the research employed a cohort-comparison evaluation design and an extensive longitudinal data archive containing complete administrative records, achievement scores, and high school transcripts to compare students who began high school in 2004 (post-policy) with their statistical counterparts who attended the same Chicago high schools in 1994 (pre-policy). The analyses explored effects of college-prep course enrollment on fifteen short-term and long-term outcomes, including credit accumulation, course failures, course absences, grade point averages in both individual courses and cumulative over four years, performance on standardized achievement tests in English and mathematics given at the beginning of tenth grade, high school graduation, and college attendance. The analytic models were constructed as three-level hierarchical linear models, with students nested in cohorts, which were nested in schools. Moreover, anticipating that the effects of this new curriculum reform might influence different types of students differently, the models estimated effects separately by student ability.[57] Although the research examined whether effects increased as the new curriculum was in place longer (that is, between 1997 and 2004), it did not find such a change. Thus, it retained the 1994 and 2004 comparisons.

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Early findings regarding the new curriculum policy are mixed—and unexpected. One positive finding is that the policy has been broadly implemented. That is, as of 2000 in English and 1997 in mathematics, close to 100 percent of Chicago ninth graders have been enrolled in Algebra I and survey literature, whereas a decade ago less than half of the city's students took these courses in ninth grade. Unsurprisingly, enrollment in these courses proceeded somewhat more slowly for lower-ability students. However, close to 10 percent more lower-ability students have earned credit

for Algebra I and about 30 percent more lower-ability students have earned credit for survey literature. A surprising positive finding, given the expectations of policy makers about implementing such a curriculum for all students, is that the dropout rate did not increase. With close to half of all students who enter Chicago high schools failing to graduate, it is difficult to extol this positive finding—but it is also difficult to ignore.

Among the chief negative findings is that lower-ability students were more likely to fail these classes in 2004 than in 1994 (an 8 percent increase for failure in Algebra I). Absenteeism from these ninth-grade courses was also somewhat higher for upper-ability students in 2004 than it was for their counterparts in 1994 (about two more missed days in English, three more in algebra). Moreover, grades were lower for lower-ability students in their ninth-grade math and English classes in 2004 than they were in 1994 (0.15 standard deviation units lower in both subjects). Fewer students in the lower-ability quartile (but not the lowest) were likely to attend a four-year college after graduating from high school (3 percent fewer, compared with the pre-policy cohort).

Across many dimensions, the early findings indicate no differences between the pre-policy and post-policy groups. Across ability groups, the results suggest no significant policy effects on either standardized achievement scores or the number of credits earned in high-level mathematics courses. In sum, despite samples that include the full populations of CPS high school students in these two cohorts, elaborate analytic models, and many statistical controls at the student and school levels, the evaluation has identified few effects of this profound curriculum reform policy.

In many respects, the findings from this first evaluation of the Chicago "College Prep for All" high school curriculum differ considerably from the findings reported in many Phase II studies that used nationally representative samples of high schools and their students. The Chicago research team has offered eight possible explanations for the differences. First, the Phase II research on high school curricula may not be entirely applicable to the Chicago policy implementation, because of issues of selectivity bias. (We discuss this matter in detail below.) A second possibility is that many Chicago students enter high school without sufficient skills to succeed in courses with high-level content and high expectations for performance. This phenomenon persists despite Chicago's efforts to end social promotion—particularly from eighth to ninth grade—and a Summer Bridge program to boost promotion. Third, instruction in the college-prep courses may not be of high quality, particularly for lower-ability students. Many teachers of Algebra I and survey literature in Chicago had previously taught the discontinued remedial reading and math courses. Changing the content of courses without also changing how they are taught may not be enough to induce higher learning. A related fourth explanation involves classroom composition and peer effects. Before the policy was implemented, students were generally tracked and attended classes with similar-ability peers. After the policy was implemented, courses enrolled students of all ability levels, but teachers were not provided with professional development regarding how to teach these subjects to lower-ability students, particularly in heterogeneous settings. Fifth, some students may simply be unable to handle high-level content. The research team is reluctant to accept this hypothesis, which is behind the philosophy that has governed most public

high schools for more than a century. Sixth, it may be that implementing a demanding curriculum without attending to students' non-cognitive skills and behaviors—such as absenteeism, failure to complete homework, lack of engagement, and disruptive classroom behavior—is unwise. Student learning may be unlikely to improve without attention to these behaviors and attitudes. Seventh, it is possible that although the courses are described and labeled as Algebra I and survey literature, their content may not live up to their titles: these courses could simply be "old wine in new bottles." The final hypothesis for the surprising findings of the evaluation involves the context of the new policy. The share of students who would have been taking remedial courses was much higher in some schools than in others. Implementing such a "sea change" in those high schools was particularly difficult. However, the evaluation grouped all high schools together.

The Problem of Selectivity Bias in Research about Curriculum

Although each of these hypothetical issues deserves more discussion, space limitations allow us to expand only on the first. The body of research on curriculum effects from Phase II is extensive, and the evidence from these studies is generally quite positive: in schools where students typically complete rigorous course sequences in high schools, students learn more, and the learning is more equitably distributed. However, the conclusions drawn by much of the Phase II research—that schools should extend the college-preparatory curriculum to all students—may have been premature. The studies are likely plagued by selectivity bias, which, as noted earlier, potentially operates at two distinct levels: student allocation to coursework is a phenomenon that occurs both *within* and *between* schools.

The Phase II studies cited above were generally conducted using nationally representative samples of high schools, the majority of which were comprehensive public high schools that offered students choice within broad curricula. Moreover, the fact that these studies used multi-level analytic methods means that students were compared with other students in the same high schools (that is, schools with the same sets of courses available). The concern with selectivity bias here is that students who select rigorous courses (or have them selected for them) are also more likely to come from socioeconomically advantaged families, to be more motivated than other students in their school, and to possess unmeasured personal characteristics beyond academic ability that allowed them to do well enough in previous courses to move on to advanced coursework. Statistical controls for students' academic and social backgrounds—the typical methods of addressing student selection to courses—would not capture unmeasured characteristics, such as student motivation, personality traits, or access to social and academic supports. However, these characteristics affect student outcomes independent of course selection. For example, important differences likely distinguish a low-income, average-achieving student who completes trigonometry from a low-income, average-achieving student who stops at geometry. These unmeasured differences are probably also related to how much mathematics each student learns during high school. In addition, more effective teachers often teach the advanced courses within schools, which could influence student outcomes above and beyond the effects of curricular content. When schools are mandated to teach Algebra I or English to all ninth graders, the people who teach these courses will likely not change, even if the course offerings are revised.

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Selection bias in student course-taking likely exists not only within schools but also between schools. The background of students in different types of public high schools and of students in public and private schools varies widely. Selection bias at the school level may thus occur because high schools offer a broad array of courses in response to the perceived needs and desires of their students and families. Schools serving large proportions of students with disadvantaged backgrounds often do not offer a full array of challenging and advanced courses, either because of a lack of demand from parents or perceptions that their students cannot handle rigorous material. Schools that do provide access to advanced courses may be college-oriented in other ways beside the curriculum. They may enroll larger proportions of motivated students, have greater "academic press," and have teachers and staff who know how to prepare students for college. The Phase II studies that compared the link between course taking and achievement in Catholic and public schools must therefore contend with considerable self-selection in who chooses to attend such schools.[58] Studies focused on public high schools must also consider self-selection, as schooling is typically tied to residential location. Thus, in addition to within-school selection bias, between-school biases may exist, in that students who typically complete demanding course sequences are those who also attend schools where such courses are available and have families that have selected particular schools for them to attend. In this regard, it would appear that almost all research on curriculum effects on student outcomes is—almost by definition—plagued by some form of selection bias.

Differences between Chicago schools and those in much of the United States raise still more selection bias issues. In Chicago, many students enter high school with low achievement. Although some students in Chicago are similar to the students in the Phase II studies, in that they choose college-preparatory coursework, many are quite different from that group of students. Most important, the curriculum structures of schools in the Phase II studies also differ, in that students in those schools were allowed to choose from a wide array of courses, some of which were rigorous, some of which were not, and some of which were remedial in nature. In Chicago, such choices were eliminated during the early high school grades. In theory at least, all courses are rigorous, none are remedial, and students have no choice (at least not in English and mathematics at grade nine). At this level, there is no selectivity bias in the Chicago study, precisely because all students—regardless of their social or academic background—are enrolled in college-preparatory coursework. This fact may well explain the conflicting Chicago and Phase II results. Both the Phase II and Phase III studies take background characteristics into account, but the organizational context (that is, the structure of the curriculum) in the Phase II and Phase III research is quite different.

The pervasiveness of these concerns about selection bias suggests that the findings of the Phase II studies may not be generalizable to schools that enroll high proportions of low-performing students. Students who would be affected by ending remedial coursework would predominantly be low-achieving students who would have otherwise been counseled into low-level courses, if such options were available (as they were in Chicago before 1997). In the Phase II studies, those low-ability students who took college-prep coursework would have been a very select group and may not be representative of most low-ability students (including those in Chicago). It is not clear from the Phase II research whether curricular effects differ for low-ability and high-ability students, who should be better able to handle higher-level content.

Whatever the explanation for the Chicago evaluation findings, they call into question the conclusion of the Phase II research that the constrained academic curriculum reduces social stratification in educational outcomes and raises achievement across the board.[59] It is possible that the findings from the Phase II studies simply cannot be generalized to the Chicago context because of selection bias. It is also possible that the "College Prep for All" curriculum cannot be successfully implemented without attending to many other issues plaguing high schools, such as unmotivated and unprepared students, lackluster instruction, or teachers unprepared to instruct heterogeneous classes. In any case, the Chicago evaluation requires policy makers, practitioners, and researchers concerned about issues of excellence and equity in secondary education to focus anew on what is the most appropriate high school curriculum, especially for initially low-performing and possibly unmotivated adolescents.

Conclusion

Two somewhat contradictory ideals are at play within contemporary public high schools. A democratic ideal demands that all students be afforded equal educational opportunities, thereby providing equitable prospects for social and economic advancement. The second ideal, related to America's fervent belief in the value of individual choice, argues that the diversity of students' interests, efforts, and abilities requires that schools permit students choice among their varied academic offerings. However, allowing choice in virtually any context, by definition, induces variation in the actions and decisions of groups and individuals. Herein rests the contradiction. Do students really have the same opportunities to learn if they are permitted to choose among different courses, unless all courses are equally demanding and contain equally valuable content?

How schools, school districts, and states can best balance these competing ideals is complicated, and the dilemma is implicit in all levels of policy making. For example, the tension can be seen at the national level in simultaneous calls for both increased standards and increased school choice options. Although market-oriented curricular structures complement America's fervent support for all types of choice, they may not serve low-income and minority students well. Traditionally disadvantaged students are less likely to select advanced courses or programs, and the knowledge and skills *not* gained by these students may affect their educational and economic futures. But mandating that these students take such courses, without attending to the surrounding issues that would make them succeed in the courses, seems to be questionable at least on the basis of the evidence from Chicago.[60]

We close by returning to the broad questions we raised at the beginning of this article. What should students learn in high school? Should all students learn the same thing? Who should make the decisions about what to learn and who should learn what? Despite decades of research on the links between high school curricula and student outcomes, the historical arguments outlined a century ago by the Committee of Ten and the *Cardinal Principles* remain both salient and unresolved. Nevertheless, we can point to one area in which a general consensus has been reached. Based partly on normative notions of fairness and equity, few contemporary policy makers support a return to traditional tracking and the segregating and stratifying effects of the comprehensive high school curriculum. In this sense, the pendulum has—at least for the moment—swung away from the arguments espoused in the *Cardinal Principles.* However, policies requiring common coursework taken by all students may themselves be accompanied by undesirable consequences. Thus, policy makers, although knowledgeable about the outcomes associated with each curriculum structure, are likely to be unclear as to which approach is most appropriate. Social differences in exposure to advanced academic material exacerbate inequalities in student learning, but mandating such exposure may not necessarily improve outcomes for low-achieving students. This suggests to us the inevitability of additional phases of reform and research on the high school curriculum, as well as continued debates about the purpose and meaning of secondary education.

Endnotes

1. Charles E. Bidwell and John D. Kasarda, "Conceptualizing and Measuring the Effects of School and Schooling," *American Journal of Education* 88 (1980): 401–30; and Stephen W. Raudenbush and Anthony S. Bryk, *Hierarchical Linear Models: Applications and Data Analysis Methods* (Thousand Oaks, Calif.: Sage Publications, 2002).

2. National Education Association, *Report of the Committee on Secondary School Studies* (Washington: U.S. Government Printing Office, 1893).

3. National Education Association, *Cardinal Principles of Secondary Education: A Report of the Commission on the Reorganization of Secondary Education* (Washington: U.S. Government Printing Office, 1918).

4. Leonard P. Ayres, *Laggards in Our Schools: A Study of Retardation and Elimination in City School Systems* (New York: Charities Publication Committee, 1909); and John F. Bobbitt, *How to Make a Curriculum* (Boston: Houghton Mifflin, 1924).

5. Edward L. Thorndike, "The Opportunity of the High Schools," *The Bookman,* October 1906: p. 180.

6. David L. Angus and Jeffrey E. Mirel, *The Failed Promise of the American High School, 1890–1995* (Teachers College Press, 1999); Lawrence A. Cremin, *The Transformation of the School: Progressivism in American Education* (New York: Knopf, 1961); Herbert M. Kliebard, *The Struggle for the American Curriculum 1893–1958* (New York: Routledge, 1995); Jeannie Oakes, *Keeping Track: How Schools Structure Inequality* (Yale University Press, 1985); and Arthur G. Powell, Eleanor Farrar, and David K. Cohen, *The Shopping Mall High School: Winners and Losers in the Educational Market Place* (Boston: Houghton Mifflin, 1985).

7. Powell, Farrar, and Cohen, *The Shopping Mall High School* (see note 6), p. 260.

8. Donald R. Moore and Suzanne Davenport, *The New Improved Sorting Machine* (Madison, Wis.: University of Wisconsin–Madison, School of Education, National Center on Effective Secondary Schools, 1988).

9. Phillip A. Cusick, *The Egalitarian Ideal and the American High School: Studies of Three Schools* (New York: Longman, 1983).

10. Oakes, *Keeping Track* (see note 6); Powell, Farrar, and Cohen, *The Shopping Mall High School* (see note 6); and Susan Yonezawa, Amy S. Wells, and Irene Serna, "Choosing Tracks: 'Freedom of Choice' in Detracking Schools," *American Educational Research Journal* 39, no. 1 (2002): 37–67.

11. Samuel Lucas, *Tracking Inequality* (Teachers College Press, 1999), p. 16.

12. Cusick, *The Egalitarian Ideal* (see note 9).

13. Angus and Mirel, *The Failed Promise* (see note 6).

14. Aage B. Sorensen, "Organizational Differentiation of Students and Educational Opportunity," *Sociology of Education* 43, no. 4 (1970): 355–76.

15. National Commission on Excellence in Education, *A Nation at Risk: The Imperative for Educational Reform* (Washington: U.S. Government Printing Office, 1983).

16. Ibid., p. 7.

17. Ibid., p. 18.

18. Angus and Mirel, *The Failed Promise* (see note 6).

19. Susan Fuhrman, William H. Clune, and Richard F. Elmore, "Research on Education Reform: Lessons on the Implementation of Policy," *Teachers College Record* 90, no. 2 (1988): 237–57.

20. Allen Odden, *Financing Education in an Era of Excellence: National and MCREL State Trends* (Kansas City, Mo.: Mid-Continent Regional Educational Laboratory, 1987).

21. William H. Clune, *The Implementation and Effects of High School Graduation Requirements: First Steps toward Curricular Reform* (New Brunswick, N.J.: Rutgers University, Center for Policy Research in Education [CPRE], CPRE Research Report Series RR-011, 1989); William H. Clune and Paula A. White, "Education Reform in the Trenches: Increased Academic Course Taking in High Schools with Lower Achieving Students in States with Higher Graduation Requirements," *Educational Evaluation and Policy Analysis* 14, no. 1 (1992): 2–20.

22. Angus and Mirel, *The Failed Promise* (see note 6).

23. Fuhrman, Clune, and Elmore, "Research on Education Reform" (see note 19).

24. Clune, *The Implementation and Effects* (see note 21); William A. Firestone, Susan H. Fuhrman, and Michael W. Kirst, *The Progress of Reform: An Appraisal of State Education Initiatives* (New Brunswick, N.J.: Rutgers University, Center for Policy Research in Education [CPRE]; CPRE Research Report Series RR-014, 1989).

25. Tom Loveless, *The Tracking Wars: State Reform Meets School Policy* (Washington: Brookings Institution Press, 1999).

26. National Center for Education Statistics, "The 1990 High School Transcript Study Tabulations: Comparative Data on Credits Earned and Demographics for 1990, 1987, and 1982 High School Graduates" (Washington: NCES, 1993).

27. James McPartland and Barbara Schneider, "Opportunities to Learn and Student Diversity: Prospects and Pitfalls of a Common Core Curriculum," *Sociology of Education* Extra Issue (1996): 66–81.

28. Fuhrman, Clune, and Elmore, "Research on Education Reform" (see note 19).

29. Clune, *The Implementation and Effects* (see note 21).

30. Ibid., p. 15.

31. Marshall S. Smith and Jennifer O'Day, "Systemic School Reform," in *The Politics of Curriculum and Testing: The 1990 Yearbook of the Politics of Education Association,* edited by Susan H. Fuhrman and Betty Malen (London: Falmer, 1991), pp. 233–67.

32. Firestone, Fuhrman, and Kirst, *The Progress of Reform* (see note 24).

33. Ibid.; Fuhrman, Clune, and Elmore, "Research on Education Reform" (see note 19); Smith and O'Day, "Systemic School Reform" (see note 31).

34. David K. Cohen, "Teaching Practice: Plus Que Ça Change…," in *Contributing to Educational Change: Perspectives on Research and Practice,* edited by Phillip W. Jackson (Berkeley, Calif.: McCutchan Publishing

Corporation, 1988), pp. 27–84; Daniel C. Lortie, *Schoolteacher: A Sociological Study* (University of Chicago Press, 1975); David Tyack and Larry Cuban, *Tinkering toward Utopia: A Century of Public School Reform* (Harvard University Press, 1995).

35. Cohen, "Teaching Practice" (see note 34); Lortie, *Schoolteacher* (see note 34).

36. U.S. Department of Education, *Mathematics Equals Opportunity* (Washington: Department of Education, 1997).

37. Amy S. Wells and Robert L. Crain, *Stepping over the Color Line: African-American Students in White Suburban Schools* (Yale University Press, 1997); Amy S. Wells and Jeannie Oakes, "Potential Pitfalls of Systemic Reform: Early Lessons from Detracking Research," *Sociology of Education* Extra Issue (1996):135–43.

38. Angus and Mirel, *The Failed Promise* (see note 6).

39. Earnest L. Boyer, *High School: A Report on Secondary Education in America* (New York: Harper & Row, 1983); Cusick, *The Egalitarian Ideal* (see note 9); John L. Goodlad, *A Place Called School* (New York: McGraw-Hill, 1984); Gerald Grant, *The World We Created at Hamilton High* (Harvard University Press, 1988); Powell, Farrar, and Cohen, *The Shopping Mall High School* (see note 6); Oakes, *Keeping Track* (see note 6); Michael W. Sedlak and others, *Selling Students Short: Classroom Bargains and Academic Reform in the American High School* (Teachers College Press, 1986); Theodore R. Sizer, *Horace's Compromise: The Dilemma of the American High School* (Boston: Houghton Mifflin, 1984).

40. Grant, *The World We Created* (see note 39); Powell, Farrar, and Cohen, *The Shopping Mall High School* (see note 6); Oakes, *Keeping Track* (see note 6); Yonezawa, Wells, and Serna, "Choosing Tracks" (see note 10).

41. Karl L. Alexander and Martha A. Cook, "Curricula and Coursework: A Surprise Ending to a Familiar Story," *American Sociological Review* 47 (1982): 626–40; Karl L. Alexander and Edward L. McDill, "Selection and Allocation within Schools: Some Causes and Consequences of Curriculum Placement," *American Sociological Review* 41 (1976): 963–80; Barbara Heyns, "Social Selection and Stratification in Schools," *American Journal of Sociology* 79 (1974): 1434–51; Robert M. Hauser, William H. Sewell, and Duane Alwin, "High School Effects on Achievement," in *Schooling, and Achievement in American Society,* edited by Sewell, Hauser, and Featherman (New York: Academic Press, 1976), pp. 309–41.

42. Powell, Farrar, and Cohen, *The Shopping Mall High School* (see note 6).

43. Sedlak and others, *Selling Students Short* (see note 39).

44. Cusick, *The Egalitarian Ideal* (see note 9); Powell, Farrar, and Cohen, *The Shopping Mall High School* (see note 6); Sedlak and others, *Selling Students Short* (see note 39).

45. Sizer, *Horace's Compromise* (see note 39), p. 156.

46. Goodlad, *A Place Called School* (see note 39), p. 297.

47. Mortimer J. Adler, *The Paideia Proposal: An Educational Manifesto* (New York: Collier Books, 1982).

48. Anthony S. Bryk, Valerie E. Lee, and Peter B. Holland, *Catholic Schools and the Common Good* (Harvard University Press, 1993); James S. Coleman, Thomas Hoffer, and Sally Kilgore, *High School Achievement: Public and Private Schools Compared* (New York: Basic Books, 1982); Adam Gamoran, "The Variable Effects of High School Tracking," *American Sociological Review* 57 (1992): 812–28; Valerie E. Lee and

Anthony S. Bryk, "A Multilevel Model of the Social Distribution of High School Achievement," *Sociology of Education* 61 (1988): 78–94; Valerie E. Lee and Anthony S. Bryk, "Curriculum Tracking as Mediating the Social Distribution of High School Achievement," *Sociology of Education* 62 (1989): 172–92.

49. Bryk, Lee, and Holland, *Catholic Schools and the Common Good* (see note 48); Gamoran, "The Variable Effects" (see note 48); Lee and Bryk, "Curriculum Tracking" (see note 48).

50. Adam Gamoran, "The Stratification of High School Learning Opportunities," *Sociology of Education* 60 (1987): 135–55; Adam Gamoran and Robert D. Mare, "Secondary School Tracking and Educational Inequality: Compensation, Reinforcement, or Neutrality?" *American Journal of Sociology* 94, no. 5 (1989): 1146–83; Valerie E. Lee and others, *High School Curriculum Structure: Effects on Course-Taking and Achievement in Mathematics for High School Graduates. An Examination of Data from the National Educational Longitudinal Study of 1988* (Washington: U.S. Department of Education, Office of Educational Research and Development, National Center for Education Statistics, Working Paper No. 98-09, 1998); Valerie E. Lee and Julia B. Smith, "Effects of High School Restructuring and Size on Gains in Achievement and Engagement for Early Secondary School Students," *Sociology of Education* 68, no. 4 (1995): 241–70; Valerie E. Lee, Robert G. Croninger, and Julia B. Smith, "Course-Taking, Equity, and Mathematics Learning: Testing the Constrained Curriculum Hypothesis in U.S. Secondary Schools," *Educational Evaluation and Policy Analysis* 19, no. 2 (1997): 99–121; Valerie E. Lee, Julia B. Smith, and Robert G. Croninger, "How High School Organization Influences the Equitable Distribution of Learning in Mathematics and Science," *Sociology of Education* 70, no. 2 (1997): 128–50.

51. Karl L. Alexander and Aaron M. Pallas, "Curriculum Reform and School Performance: An Evaluation of the 'New Basics,'" *American Journal of Education* 92 (1984): 391–420; Adam Gamoran and Eileen 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, no. 3 (2000): 241–54; Lee and others, *High School Curriculum Structure* (see note 50); Gary Natriello, Aaron M. Pallas, and Karl Alexander, "On the Right Track? Curriculum and Academic Achievement," *Sociology of Education* 62 (1989): 109–18. However, there is some evidence that the positive academic benefits of reducing curricular differentiation for low-achieving students is counterbalanced by potentially harmful effects for high-achieving students; see Laura M. Argys, Daniel I. Rees, and Dominic J. Brewer, "Detracking America's Schools: Equity at Zero Cost?" *Journal of Policy Analysis and Management* 15, no. 4 (1996): 623–45. Recent qualitative research in "detracked" high schools provides several potential explanations for this finding. Foremost is the fact that teachers are unaccustomed to managing heterogeneous classes, and when required to do so tend to target instruction at average-ability students, which may stretch low-achieving students intellectually, but leaves higher-achieving students unchallenged; see James E. Rosenbaum, "If Tracking Is Bad, Is Detracking Better?" *American Educator* 23, no. 4 (1999): 24–29, 47. We return to this important issue in our discussion of the Chicago curriculum reforms.

52. Many of these studies employed data collected by the National Center for Education Statistics, particularly High School and Beyond (HS&B), and the National Educational Longitudinal Study (NELS: 88).

53. Elizabeth DeBray, "A Comprehensive High School and a Shift in New York State Policy: A Study of Early Implementation," *The High School Journal* 89, no. 1 (2005): 18–45; John W. Sipple, Kieran Killeen, and David H. Monk, "Adoption and Adaptation: School District Responses to State Imposed Learning and Graduation Requirements," *Educational Evaluation and Policy Analysis* 26, no. 2 (2004): 143–68.

54. Achieve, Inc., *Benefits of a High School Core Curriculum for Students in Urban High Schools* (www.act.org/research/policymakers/pdf/core_curriculum.pdf [February 15, 2008]).

55. The Chicago Public Schools make up the third-largest school district in the country, with a school population that is 50 percent African American, 38 percent Latino, 9 percent white, and 3 percent Asian. More than half of all Chicago students qualified for meal subsidies.

56. Members of the research team are also engaged in another series of studies on the efficacy of the double-dose reform element in ninth-grade mathematics and on student outcomes of the increase in AP course offerings and enrollment in Chicago. Results of those studies are not yet available.

57. Elaine Allensworth and others, *College Preparatory Curriculum for All in Chicago High Schools: Consequences of Ninth-Grade Course Taking on Academic Outcomes* (Chicago: University of Chicago, Consortium on Chicago School Research, 2008).

58. Indeed, a central criticism of the Phase II Catholic-public sector comparisons is that they may have inadequately accounted for pre-existing differences in the types of students who attend Catholic and public schools. However, none of these critiques focused specifically on selection bias in terms of student course-taking. See Arthur S. Goldberger and Glen G. Cain, "The Causal Analysis of Cognitive Outcomes in the Coleman, Hoffer and Kilgore Report," *Sociology of Education* 55, April/July (1982): 103–22; Richard J. Murnane, Stuart Newstead, and Randall J. Olsen, "Comparing Public and Private Schools: The Puzzling Role of Selectivity Bias," *Journal of Business & Economic Statistics* 3, no. 1 (1985): 23–35; Jay Noell, "Public and Catholic Schools: A Reanalysis of Public and Private Schools," *Sociology of Education* 55, April/July (1982): 123–32.

59. Readers should note that both authors of this article have been directly involved in both the research and policy process related to the Chicago Public School curriculum reforms in the 1980s through the present. Thus, our perspective on the nature of these research findings and efficacy of the reform initiatives may have been influenced by this involvement.

60. Our support of the constrained academic curriculum that grew out of our own research on this topic has been shaken by the early evaluations of Chicago's "College Prep for All" curriculum. However, as the Chicago research team digs deeper into its evaluation, it may unearth other explanations for the disappointing initial results. Although it is unusual in a review such as this to include personal reflections, it is also difficult to report such findings as though the research were done by someone else. When those who are summarizing research findings are also those who have had a hand in producing some of those findings, it would be disingenuous to suggest a complete objectivity that may not apply.