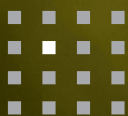


College Prep for All?

WHAT WE'VE LEARNED FROM CHICAGO'S EFFORTS

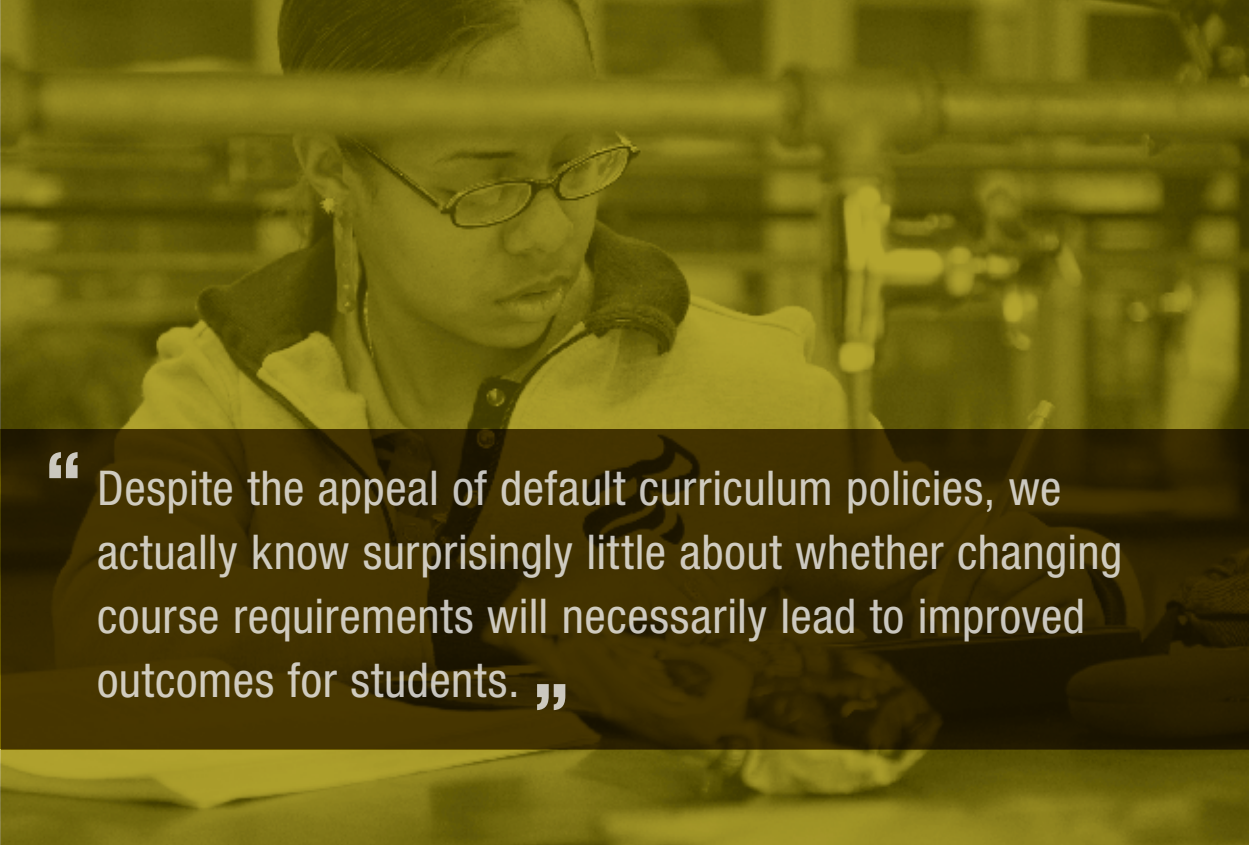
RESEARCHERS: Elaine Allensworth, Takako Nomi, Nicholas Montgomery, and Valerie Lee

AUTHOR: Christopher Mazzeo



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A young woman with glasses is looking down at a book in a library. The background shows bookshelves filled with books. The image is overlaid with a semi-transparent dark green banner containing a quote.

“ Despite the appeal of default curriculum policies, we actually know surprisingly little about whether changing course requirements will necessarily lead to improved outcomes for students. ”

Introduction

As state and national policymakers look for ways to improve the rigor of the high school curriculum and enhance student readiness for college, many are turning their attention to increasing course requirements in core academic high school subjects. According to the national policy group Achieve, 21 states and the District of Columbia now require all students to take some version of a mandatory or default college preparatory curriculum to graduate—generally defined as four years of English and math and three or more years of science and/or social science.¹ In a recent speech in Selma, Alabama, U.S. Secretary of Education Arne Duncan vowed to increase opportunities for all students to take college-preparatory classes and called on his Office of Civil Rights to conduct compliance reviews in states and districts in order to “ensure that low-income Latino and African American students get the same access to a college-preparatory curriculum” as their peers.²

These coursework reforms are proving to be equally popular among educators and the public. In California, for example, parents, student advocates, and community organizations aggressively advocated for the state and local districts to adopt the University of California’s “A-G” coursework requirements as the required curriculum for all students.³ In May of 2009, in response to student and community concerns, the San Francisco Board of Education passed a unanimous resolution to adopt the “A-G” requirements as the default curriculum for all San Francisco high schools.⁴ A number of other districts and states are actively considering adopting similar curriculum policies as part of a national push to embrace college- and career-ready standards for all students.

The popularity of this approach to increasing curriculum rigor and college readiness seems, at first glance, to make a lot of sense. Existing research shows that students who take high-level course sequences learn more in high school and are more likely to attend and perform better in college than students who do not take these classes.⁵ Yet, despite the appeal of mandatory curriculum policies, surprisingly little is known about whether changing course requirements will necessarily lead to improved outcomes for students. This is because the previous studies

BY THE NUMBERS

21

states and the District of Columbia will have mandatory high school curriculum graduation requirements by 2015.

Source: Achieve, Inc. (2010).

1 Achieve, Inc. (2010).

2 Duncan (2010).

3 University of California (2010).

4 Cervone (2009).

5 Descriptions of existing research linking college-preparatory coursework to student outcomes may be found in the full study by Allensworth, Elaine M., Takako Nomi, Nicholas Montgomery, and Valerie E. Lee. 2009.



cited by many in the policy and reform communities do not fully correct for what researchers call selection bias: that is, the students who choose to take high-level classes are often the most motivated and high-achieving students in their schools, and the schools that offer advanced courses to students are those with the capacity to teach them and are often college-oriented in other ways.

To inform state and district curriculum policies, and to address some of these limitations of the previous research, research teams at the Consortium on Chicago School Research (CCSR) at the University of Chicago and at the University of Michigan spent the last three years examining a 1997 Chicago Public Schools (CPS) effort to implement a version of the mandatory college-preparatory curriculum. The 1997 CPS policy change ended remedial classes and required college-preparatory coursework for all students in four subject areas: English, math, science, and social studies. This policy brief describes the key findings from this study of the 1997 reform and highlights its implications for ongoing state and national policy deliberations.

Why a Mandatory Curriculum?

For much of the twentieth century, high school education was organized around a “differentiated curriculum” that offered students choices from a broad range of academic and vocational offerings and coursework at varying levels of difficulty and rigor.⁶ Though originally viewed as a more democratic model of schooling, the differentiated curriculum resulted in considerable variation in students’ academic experiences across and within schools. An extensive body of research documents this social stratification in educational opportunities and outcomes and identifies strong and pervasive links between students’ academic, racial, and socio-economic backgrounds and the quality and academic demand of their high school courses.⁷

Concerns about the negative effects of the differentiated curriculum are echoed by policymakers and education reformers worried about the depth and rigor of the high school curriculum and whether

6 Angus & Mirel (1999); Bryk, Lee, & Holland (1993); Cremin (1961); Lee & Ready (2007); Oakes (1985); Oakes (2005); Powell, Farrar, & Cohen (1985); Yonezawa, Wells, and Serna (2002).

7 Lee (2002); Lee & Ready (2007); Yonezawa et al. (2002); Newmann (1996); Oakes (1985, 2005).



this curriculum effectively prepares all students for college and the workforce. These varying criticisms of the differentiated curriculum are helping to spur a national movement to adopt more rigorous and uniform high school course requirements. In 2005, the National Governors Association (NGA) recommended toughening high school graduation requirements to insist on college-preparatory coursework for everyone.⁸ Recent policy reports from ACT (2008) and Achieve (2004, 2007, 2010) also advocated increasing the rigor of high school coursework and requiring specific curriculum sequences for all students.⁹ By 2015, 21 states and the District of Columbia will require all high school students to take some version of a mandatory or default curriculum to graduate from high school.¹⁰

➤ College-Prep Coursework in Chicago

The College Preparatory Curriculum in Chicago

The Chicago curriculum reform mandated college-preparatory coursework for all students in all high schools beginning with students entering high school in 1997. The policy required four years of specific English courses (survey literature, American literature, European literature, and world literature); three years of specific math courses (algebra, geometry, and advanced algebra); three years of laboratory science (biology, earth and space or environmental science, and chemistry or physics); and three years of social science (world studies, U.S. history, and an elective).

To examine the consequences of the new curriculum on students' outcomes, the research teams compare outcomes for students in Chicago before and after policy implementation in three subject areas: English, math, and science. In the study described in this brief, the focus is on two mandatory ninth grade courses: Algebra I and English I. This focus was selected because ninth grade coursework often serves as a “gatekeeper” in many schools for more advanced study, and remedial coursework was common in Chicago prior to 1997 in both subjects. Under the new policy, students were required to take Algebra I and English I in the ninth grade (or a higher course in the math or English sequence, such as geometry, Algebra II, or English II).

4 Years of English Courses

3 Years of Math Courses

3 Years of Laboratory Science

3 Years of Social Science

8 National Governors Association for Best Practices (2005).

9 Achieve, Inc. (2004, 2007, 2010); ACT (2008).

10 Achieve, Inc. (2010).



BY THE NUMBERS

90%

of Chicago Public Schools' students were enrolled in college-preparatory courses after the policy change.

This policy brief summarizes this study's findings around three main research questions:

- **Did enrollment in ninth-grade college-preparatory courses increase as a result of the policy mandate, and did course-taking change among different types of students after the policy was implemented?** In other words, did schools respond to the external mandate, and did this result in a more equitable distribution of course taking in these subjects?
- **Did students' academic outcomes improve by taking college-preparatory instead of remedial classes?** This question focuses on students with the weakest entering skills—those whose coursework would be most affected by the requirement to take more demanding classes. Did the policy change impact these students positively? Did lower skilled students have more difficulty adjusting to the more demanding courses?
- **Did the policy effects differ for students entering high school with different skill levels?** The effects of a mandatory curriculum may be different for entering students with moderate and higher skill levels. For example, the new policy in CPS could have affected the classroom climate or the quality and rigor of instruction in the college-preparatory classes as the mix of students in these classes changed. These changes—or other unanticipated consequences—could influence the outcomes for these and other students in ways that compromise the overall effects of the reform.

Key Findings

The New Policy Led To More Ninth Grade Students Taking College-Preparatory Classes

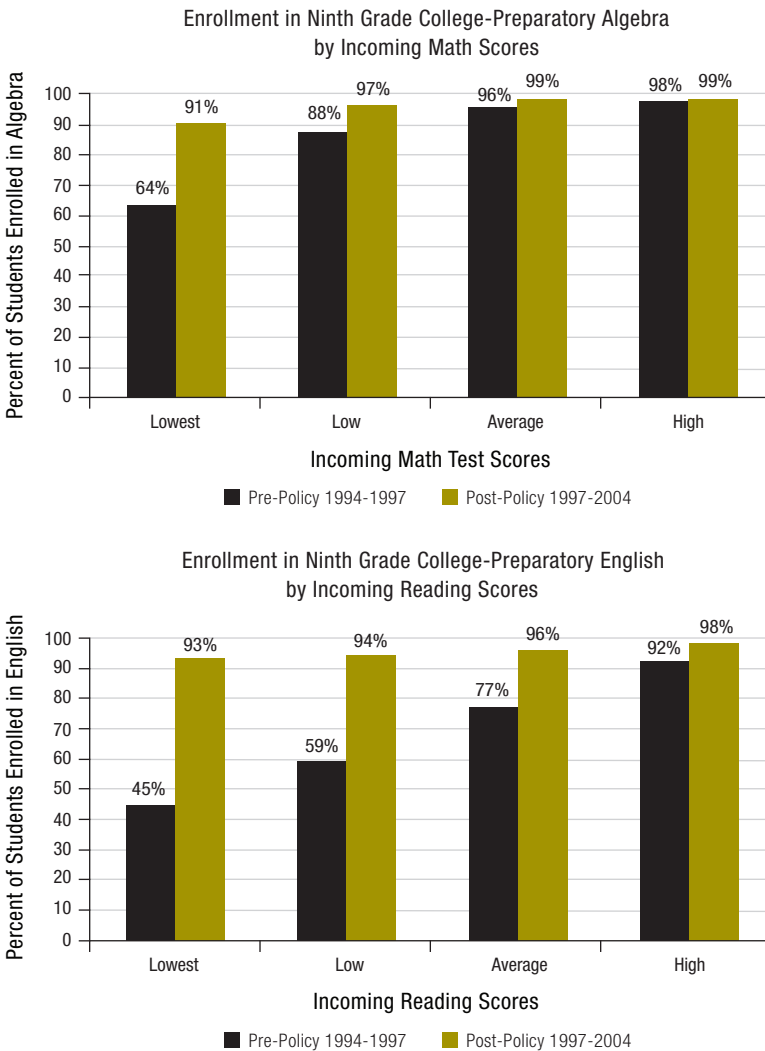
By 2004, seven years after the policy was adopted, virtually all CPS ninth-graders were enrolled in both English I and Algebra I. Figure 1 shows that the new policy had especially strong effects on course enrollment among lower-skilled students—well over 90 percent of students with the lowest entering achievement were enrolled in college-preparatory English and algebra classes.

Gaps in course enrollment by race and ethnicity that existed prior to the 1997 policy largely disappeared afterwards. Although a smaller percentage of students eligible for special education services were



FIGURE 1

Algebra and English enrollment increased considerably among students entering high school with low incoming test scores



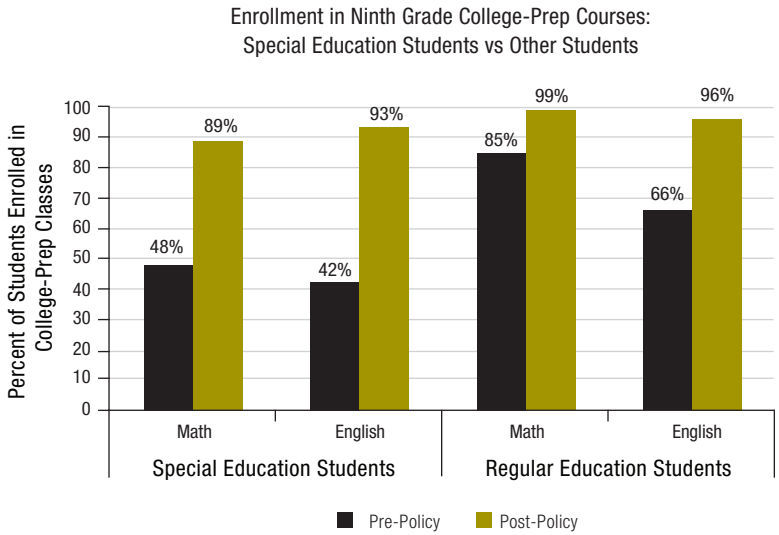
FACT:

Student enrollment in college-preparatory courses was much more equitable by race, ethnicity, and achievement level after the mandatory curriculum policy.

enrolled in college-preparatory classes by 2004, special education students' enrollment in these courses was much more strongly affected by the policy than that of regular education students (see Figure 2).

While the new policy did bring large shifts in course enrollment, it is possible that the observed changes were superficial; perhaps schools simply renamed their remedial courses while students' experiences remained the same. However, there was evidence that the new policy



FIGURE 2**Students receiving special education services showed dramatic increases in their enrollment in college preparatory coursework**

did have substantive effects on students' classroom experiences. One substantial change was a reduction in tracking. On average, students with low entering test scores were enrolled in classes with academically stronger peers post-policy than similar students prior to the 1997 reform. As well, in responses on CCSR's biennial survey, ninth grade math teachers reported spending more instructional time on algebra after the policy was implemented; and English teachers reported using fewer textbooks and more fiction, poetry, non-fiction, and plays/scripts in their classes. Although it is unlikely that all Algebra I and English I classes had equally rigorous curriculum, the reform did appear to lead to changes in the instructional experiences of lower-skilled students.

There Were No Positive Effects on Student Achievement

One of the key premises of mandatory curriculum policies is that greater equity in course-taking will lead to improvements in student learning (as measured by tests and grades) and college readiness (as measured by test score gains and increases in advanced course-taking). While students were considerably more likely to earn English I and Algebra I credits by the end of ninth grade, the researchers found no evidence of these kinds of



broader impacts on academic outcomes as a result of the new curriculum policy. Specifically, test scores in math and English were unaffected by the increase in college-preparatory coursework in the ninth grade.¹¹ Furthermore, grades declined in both subjects for lower-skill students, and these students were significantly more likely to fail their ninth grade English or math course. Absenteeism also significantly increased among students with stronger skills in both subjects.

Overall, the new curriculum policy had its strongest effects—both positive and negative—on those students with the weakest entering achievement. Compared to the pre-policy years, students entering high school with the weakest skills were significantly more likely to earn credits for Algebra I or higher-level math in ninth grade. However, these same students saw their course failures increase (by 7.7 percentage points in math) and their GPAs decline (by .15 points) after the new policy was implemented.

With regard to advanced course-taking, students were no more likely to earn upper-level math credits after the policy change. Even though post-policy students could take the college-preparatory math sequence up to pre-calculus (because they started the math sequence in ninth grade rather than tenth grade), students entering high school with low math skills did not choose to do so.

The New Mandatory Curriculum Had Negative Effects on Graduation Rates and College Enrollment

Another key argument for mandatory curricula is that these coursework reforms will help students get to college and complete their degrees. Yet the researchers found evidence to the contrary in Chicago Public Schools. Requiring a full four years of college-preparatory courses actually made it more difficult for students to obtain the credits needed to graduate, and graduation rates declined with the new policy (See Figure 3). And the researchers found no improvement in college enrollment and retention rates among those students who did graduate. In fact, students with strong grades (B average or better) were slightly less likely to go to college after the standard college-preparatory curriculum was required for all students.

Absences Matter

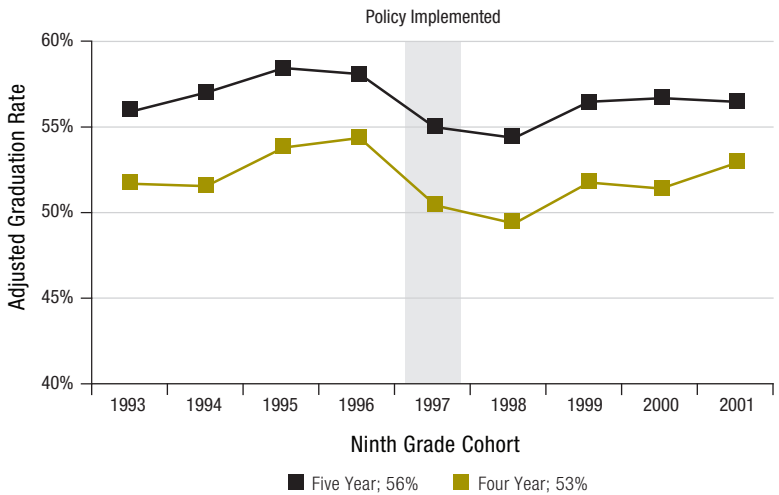
Ninth grade students with more than 9 absences in a semester have a 41% or lower likelihood of graduating in four years.

Source: Allensworth & Easton (2007).

11 Allensworth et al. (2009).



States and districts implementing mandatory curricula should focus attention on the quality of classroom instruction and the depth of the tasks students are working on in these classes.

FIGURE 3**Graduation rates declined with the new policy**

Source: Montgomery & Allensworth (2010).

Implications for State and Federal Policy

These findings have important implications for policymakers looking to enhance access to college-preparatory classes and implement a mandatory curriculum or other course-taking requirements in states or districts. While the Chicago Public Schools 1997 reform did reduce inequities in coursework by entering skill level, race and ethnicity, and special education status, the policy had no effects on the major outcomes these kinds of curricular reforms are designed to impact. Test scores did not rise among ninth-graders, students were no more likely to take advanced math classes beyond Algebra II, and they were no more likely to attend college. Moreover, the policy change produced a number of adverse consequences: math grades declined, math failures increased, absenteeism rose among average- and higher-skilled students, and graduation and college-going rates declined.

The Chicago experience should serve as a cautionary tale for those who advocate for similar mandatory curriculum policies in their cities and states. To be clear, curriculum requirements have important equity benefits and can play a role in efforts to improve students' high school experiences and their preparation for college. Mandatory curriculum reforms, however, are not likely to work effectively without other



significant and complementary policy efforts. In particular, states and districts are encouraged to attend to the following issues when implementing similar reforms.

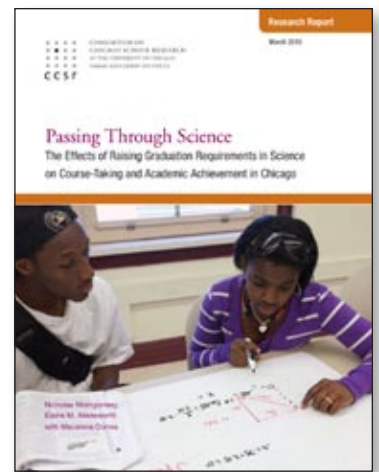
Building the Capacity of High Schools to Improve Instruction

Though there were major gains in college-preparatory course-taking in Chicago, they did not translate into tangible improvements in academic outcomes. Why was this the case? One likely culprit was the policy's very emphasis on curriculum. Unlike elementary school reforms, which often focus on the way courses should be taught, high school reforms

Passing Through Science: The Effects of Raising Graduation Requirements in Science on Course-Taking and Academic Achievement in Chicago

As part of the overall study of the 1997 curriculum reform by CCSR and the University of Michigan, the research teams looked specifically at the effects of the mandatory curriculum on science outcomes in Chicago high schools. The ensuing report, by Nicholas Montgomery and Elaine Allensworth, found that while the new curriculum requirements did lead to increased science course completion, there was little evidence of additional science learning or improved college outcomes. Two years prior to the policy change, most CPS graduates had not passed more than one science course—much less the three required under the new policy. After the policy switch, nearly all graduates completed three years of science. However, despite large increases in course-taking, there were few improvements in students' learning or engagement in science. After the policy change, five out of six CPS students averaged a C or lower in science, grades that are linked with minimal to no learning.

The new policy also had unintended negative consequences for high-achieving students, who found it more difficult to take the science course sequence required at competitive colleges. Students were no more likely to enroll in college or remain in college after the policy. In fact, college-going rates actually declined slightly in the years following the policy.



Montgomery & Allensworth (2010).



are more likely to be concerned with which courses should be offered and to whom. Despite the change in course content, students were no more engaged in learning than they were prior to the new policy—most students completed the new curriculum with grades of Cs and Ds. At a minimum, this suggests that teaching courses with high-level content to students without a record of high-level performance or engagement in their coursework will require substantial changes in instruction. More specifically, states and districts implementing mandatory curricula should focus attention on the quality of classroom instruction and the depth of the tasks students are working on in these classes.

Mandatory and default curriculum policies are likely to produce classrooms of students with more mixed incoming skill levels. Therefore, policymakers need to provide supports for the teachers who will now have to teach college-preparatory courses to students with a wider range of prior achievement—students who often have a history of poor attendance and weak study habits. Case studies of de-tracking reforms have found that teachers in these more heterogeneous classes often target instruction to the hypothetical middle student.¹² Such teaching can lead to engagement and behavior problems, among students with stronger and weaker academic backgrounds.

Ensuring That Students Are Engaged in Their Coursework

Overall, the Chicago reform lead to few long-term effects—either positive or negative. This does not mean that lower-skilled students should not take college-preparatory classes, but rather that they do not benefit from these classes any more than they do from remedial coursework. Further, average- and higher-skilled students fared even worse after the policy change, suggesting that higher failure rates are not entirely explained by students' insufficient academic preparation. Other CCSR research shows that weak academic skills are not the primary source of course failure in CPS—students' academic behaviors (attendance and completing homework) are eight times more predictive of course failure than their test scores.¹³

This raises an important point: As long as students are minimally engaged in their courses and attend school irregularly, policymakers should not expect substantial improvements in learning. Getting the

¹² Rosenbaum (1999).

¹³ Allensworth & Easton (2007).



content and structure of courses right is just the first step. Real improvements in learning will require states and districts to develop strategies that get students excited about learning, attending class regularly, and working hard in their courses.

Conclusion

Although these findings are likely disappointing to mandatory curriculum advocates, this does not suggest that these policies are misguided. Prior to 1997, the differentiated curriculum was clearly not serving Chicago students well—even when they took remedial coursework, large numbers of students failed those courses and eventually dropped out. Instead, this research suggests that mandatory and default curriculum policies need to be accompanied by a focused attention to instruction and stronger efforts to improve the academic behaviors—particularly attendance and studying—associated with better school performance. Without improved instruction and engagement, the promise of these well-meaning reforms is likely to go unrealized.

Getting the content and structure of courses right is just the first step. Real improvements in learning will require states and districts to develop strategies that get students excited about learning, attending class regularly, and working hard in their courses.



Data Sources and Methods

The study from which this brief is drawn uses data from CCSR's longitudinal data archive, which contains complete administrative records for each CPS student in each semester, semester-by-semester course transcripts, and elementary and high school achievement test scores; supplemented with additional data from the National Student Clearinghouse (NSC) on college enrollment and data from the 2000 U.S. Census. These data are linked by student IDs, which allowed the researchers to analyze change over time in individual students' performance and to control for changes in the types of students entering the high schools each year. The study used data on the entire population of students entering those high schools as first-time ninth-graders over one decade—from the cohort entering in the fall of 1994 to the cohort entering in the fall of 2004.

To measure the effects of the 1997 policy, the researchers constructed measures at the student, cohort, and school levels to capture: (1) the effects of the policy on students' course-taking, (2) students' academic outcomes, and (3) students' characteristics as they entered high school. The researchers also constructed control variables for cohort- and school-level characteristics that could otherwise influence the estimates of policy effects.

The full study on the effects of ending ninth grade remedial coursework is available in:

Allensworth, Elaine M., Takako Nomi, Nicholas Montgomery, Valerie E. Lee. 2009. College Preparatory Curriculum for All: Academic Consequences of Requiring Algebra and English I for Ninth Graders in Chicago. *Educational Evaluation and Policy Analysis*, 31 (4), pages 367-391.



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AT THE UNIVERSITY OF CHICAGO
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THE UNIVERSITY OF
CHICAGO

UEI URBAN
EDUCATION
INSTITUTE

1313 East 60th Street

Chicago, Illinois 60637

T 773-702-3364

F 773-702-2010

Our Mission

The Consortium on Chicago School Research (CCSR) at the University of Chicago conducts research of high technical quality that can inform and assess policy and practice in the Chicago Public Schools. We seek to expand communication among researchers, policy makers, and practitioners as we support the search for solutions to the problems of school reform. CCSR encourages the use of research in policy action and improvement of practice, but does not argue for particular policies or programs. Rather, we help to build capacity for school reform by identifying what matters for student success and school improvement, creating critical indicators to chart progress, and conducting theory-driven evaluation to identify how programs and policies are working.

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