





Graduations on the Rise

In his 2009 State of the Union address, President Barack Obama challenged Americans to “commit to at least one year or more of higher education or career training... Every American,” he said, “will need to get more than a high school diploma. And dropping out of high school is no longer an option. It’s not just quitting on yourself, it’s quitting on your country.” During most of the last century, steady increases in the proportion of the labor force that had graduated from high school fueled the

Organization for Economic Co-operation and Development (OECD) on this measure of educational attainment.

Between 1970 and 2000, however, the U.S. high-school graduation stagnated while in many other OECD countries it rose markedly. By 2000, the high school graduation rate in the United States ranked 13th among the 19 OECD countries for which comparable data are available.

Until quite recently, it appeared that this long stagnation had continued into the 21st

The 2000s saw boost in U.S. students completing high school

nation’s economic growth and rising incomes. The high school graduation rate for teenagers in the United States rose from 6 percent to 80 percent from 1900 to 1970. By the late 1960s, the U.S. ranked first among countries in the

century. Yet evidence from two independent sources now shows that, in fact, the graduation rate increased substantially between 2000 and 2010. The improvements were especially pronounced among blacks and Hispanics, who

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have long been far less likely to complete high school than their white peers.

Yet despite these encouraging trends, substantial graduation-rate gaps along lines of race, income, and gender persist. Moreover, graduation rates in other OECD countries also increased in the past decade. As a result, the U.S. high school graduation rate in 2010 was still below the OECD average.

What might explain these patterns in American graduation rates? Researchers from several social science disciplines have studied teenagers' decisions about whether to persist in high school and earn a diploma. Sociologists tend to emphasize the roles of peer groups and school cultures. Many psychologists have examined teenagers' decisions from a developmental perspective, recently enriched by evidence from neuroscience on brain development and the attraction of risk-taking during the teenage years. Ethnographers from various disciplines point out that for many

Measuring Completion

Graduation rates can be calculated in various ways using various sources, including the U.S. Census and related household surveys; administrative data from school systems on the number of enrollees and graduates each year; and (more recently) longitudinal databases that track individual students over time. Estimates of high school graduation rates are very sensitive to the choice of data source. They are also sensitive to choices about how to use the data.

When determining how to measure the graduation rate for the nation as a whole, two decisions are particularly important:

Do you include GED recipients among high school graduates? If you do, rates are much higher. But employment and income outcomes for GED holders look more like those of high school dropouts than of high school graduates.

Do you include recent immigrants in the analysis? If you do, the graduation rate for Hispanics is much lower. It makes sense to include them if you are trying to understand what

After 30 years of stagnation, the U.S. high school graduation rate increased between 2000 and 2010 by 6 percentage points, a substantial shift in a relatively short period of time.

youth, dropping out is a process rather than an explicit decision: irregular attendance leads to failed courses and eventually to the perception that the obstacles to graduation are overwhelming.

Economists, meanwhile, typically focus on factors that teenagers may consider in deciding whether to remain in school for another year. That is, most economic models posit that high school students are rational agents who weigh the expected benefits and costs. While there is no question that a great many teenagers do not plan beyond the next weekend, the relevant question when it comes to explaining trends is whether the degree of teenage myopia has changed over time.

As we demonstrate below, the available evidence from the economic perspective suggests that two factors are critical in explaining the stagnation that persisted until 2000: the growing availability of the GED (General Educational Development) credential and increases in the nonmonetary costs of completing high school. Even though high school graduates earned higher wages than dropouts, additional requirements for a high school diploma counteracted what were substantial economic returns to the credential. More difficult to explain is the recent increase in the graduation rate. Improvements in both school quality and the circumstances of at-risk students outside of school may have played a role.

share of young adults are high school graduates, but not if you want to understand the performance of the nation's school system in producing graduates over time.

The estimates reported below are based on the "adjusted status completion" approach used by Nobel Prize-winning economist James Heckman and co-author Paul LaFontaine to document trends over time. Status completion means estimating the share of 20- to 24-year-olds who have a high school degree in a given year, thus including all graduates rather than only those who complete high school on the expected four-year time line. Adjusted means that the approach 1) uses data from the GED Testing Service to count the number of GED recipients and to subtract this number from the total number of individuals who report that they completed high school, and 2) excludes from the calculation recent immigrants, in particular, those who came to the U.S. after age 11 and therefore were educated primarily in non-U.S. schools. Data are from the decennial censuses and the 2010 American Community Survey.

Graduation Rates over Time

The data reveal striking patterns in high school graduation rates between 1970 and 2010 (see Figure 1). After increasing rapidly for most of the 20th century, the high school graduation

rate peaked at about 80 percent around 1970. During the subsequent 30 years, the graduation rate stagnated or fell slightly. The estimated status completion rate in 2000 for 20- to 24-year-olds in the United States, excluding recent immigrants, was 77.6 percent.

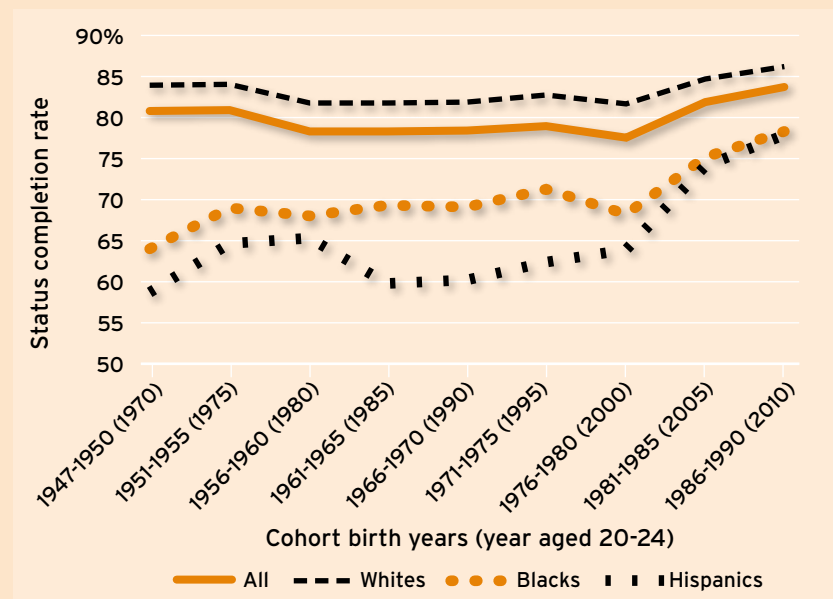
High school graduation rates have been consistently lower for black and Hispanic youth than for white youth. Again, excluding recent immigrants, the percentage of 20- to 24-year-olds identified as black or Hispanic almost doubled between 1970 (13.9 percent) and 2000 (26.9 percent). Changes in the makeup of the population during this time period therefore depressed the graduation rate as measured for the population as a whole, accounting for at least 75 percent of the overall decrease. Even so, the decline in the graduation rate of whites was almost as large as that for the population as a whole.

Between 2000 and 2010, the overall trend changed. The U.S. high school graduation rate *increased* by 6 percentage points, a substantial shift in a relatively short period of time. The rate of growth over the decade was quite steady. Not all racial and ethnic groups saw an equal rise in educational attainment, however. Figure 1 shows that the graduation rates of black and Hispanic youth born in the late 1980s were more than 10 percentage points higher than those of comparable youth born a decade earlier. As a result, the black-white and Hispanic-white gaps in graduation rates narrowed to 8.1 and 8.5 percentage points, respectively.

A gender gap favoring females opened in the 1970s and grew steadily throughout the remainder of the 20th century (see Figure 2). During the first decade of the 21st century, gender gaps in graduation rates fell, especially among Hispanics, even though graduation rates for females in all of the major racial and ethnic groups rose. The gap narrowed because the graduation rates of males, especially Hispanics, experienced greater increases. Yet even with these increases, the high school graduation rate is still

A Graduation Uptick (Figure 1)

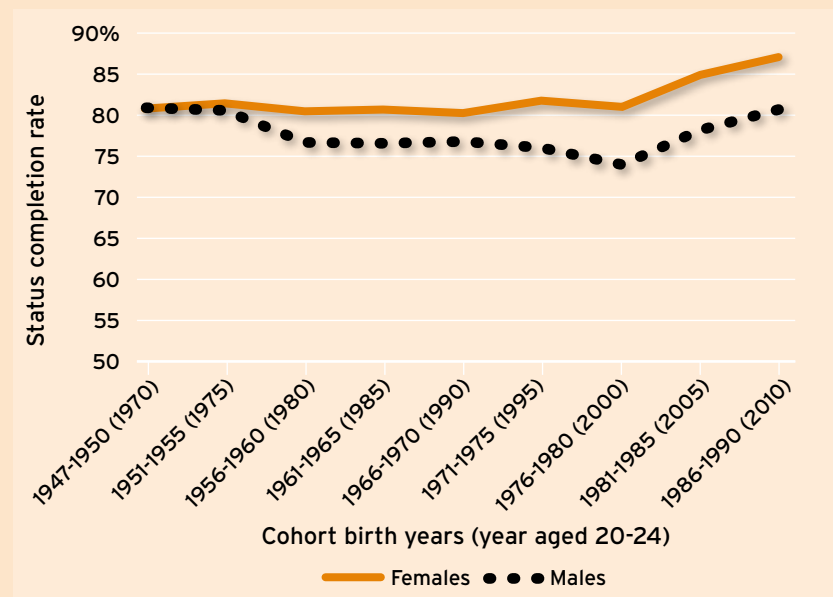
After a lengthy stagnation, graduation rates among young adults surged between 2000 and 2010, especially among blacks and Hispanics.



SOURCES: For birth cohorts 1947-1950 to 1956-1960, Heckman and LaFontaine (2010); for subsequent cohorts, authors' estimation from U.S. Census, American Community Survey (ACS), and GED Testing Service data

Gender Gap (Figure 2)

A gap favoring females emerged in the 1970s and has declined slightly since 2000, as male graduation rates increased.



SOURCES: For birth cohorts 1947-1950 to 1956-1960, Heckman and LaFontaine (2010); for subsequent cohorts, authors' estimation from U.S. Census, American Community Survey (ACS), and GED Testing Service data

higher for females than for males in each of the major racial and ethnic groups, and particularly among black youth (12.2 percentage points among 20- to 24-year-olds in 2010).

Explaining Stagnation

The long period of stagnation in graduation rates between 1970 and 2000 is especially puzzling given that the financial rewards for completing high school rose sharply during these years. The growth in the wage gap between dropouts and high school graduates, particularly during the 1980s, stemmed largely from changes in the economy that increased the demand for particular skills during a period in which the supply of workers possessing those skills grew more slowly. All else being equal, these wage trends should have caused the graduation rate to increase. So why didn't it?

One possible explanation is that general wage trends do not reflect the expected wages for adolescents on the margin of dropping out of school. A substantial proportion of students enter high school without the skills needed to complete graduation requirements. Many teenagers who drop out may correctly perceive that, as a result of their low cognitive skill levels or unproductive behavioral characteristics, they are unlikely to earn much more as a high school graduate than they would as a dropout, and certainly not enough to offset the negative experience of attending classes and completing work for which they are ill prepared.

In fact, economists Zvi Eckstein and Kenneth Wolpin show that, among white males who entered 9th grade in the early 1980s, those who failed to graduate from high school had lower academic skills and were less motivated for schoolwork than those who did graduate. One explanation for the stagnation of the high school graduation rate, then, is that by the early 1970s, the four out of five students who entered high school with the skills and behavioral traits necessary to benefit from a high school diploma were receiving one. One in five teenagers had very weak academic skills and/or behavioral tendencies not attractive to employers and therefore would not benefit much from a high school diploma, at least given the then-prevalent "shopping mall" structure of most American public high schools.

Potential criticism of this explanation comes from research on compulsory school-attendance laws. Several studies find that the labor-market payoff to adolescents completing an additional year of schooling as a result of being compelled to attend is as large as 10 percent. But these studies do not provide information on the benefits of remaining in school for students who fail to pass the core courses required to progress to the next grade level, a pattern that is particularly prevalent for black and Hispanic youth. Although laws compelling 16-year-olds to remain in school for an additional year increased by 0.16 years the

average number of years of schooling that white teenagers completed, they had no impact on the number of years of schooling black and Hispanic teenagers completed.

Despite the overall pattern of stagnation, the graduation rates of black males, after increasing for several decades, fell sharply between 1986 and 1996. William Evans and colleagues attribute this decline to the emergence of the crack cocaine market, which increased the murder rate, the incarceration rate, and the opportunity for illicit employment for black males. All of these factors reduced the economic value of a high school diploma for black males. While crack did not disappear altogether from American cities by the end of the century, it ceased to have a large impact on the graduation rates of black males because stabilization of markets reduced homicide rates markedly.

Gender gaps in educational attainment, which are not unique to the United States, are more difficult to explain using conventional economic models than gaps based on socioeconomic status or race, because males and females grow up in the same families and attend the same schools. Recent evidence provides one possible explanation for the especially large gender gap in high school graduation rates among blacks and Hispanics. Changes in judicial policies, particularly those related to drug offenses, have led to a large increase in the incarceration rate of minority males. Black and Hispanic females appear to have responded to the consequent reduction in the number of marriageable men by completing more schooling.

Alternative Credentials

Student willingness to expend time and effort to acquire a high school diploma may well depend on the attractiveness and cost of alternatives, the most common of which is the GED. Between 1970 and 1995, the percentage of new high-school completion credentials awarded through GED certification rose from 2 percent to 17 percent, with approximately half of GED recipients in the 16 to 20 age group. Factors contributing to the growing role of the GED during the last three decades of the 20th century include reductions in the minimum age for taking the exams, investments by states in GED preparation programs, the creation and expansion of programs to prepare incarcerated individuals to take the GED examinations, and increased requirements for receipt of a conventional high-school diploma.

Does the availability of the GED lead some teenagers to drop out of high school who, in the absence of the GED, would graduate? In recent work, Heckman and his colleagues exploit sudden changes in GED policies within specific states to answer this question. For example, they show that the California legislature's decision to make the GED available to civilians in 1974 lowered the high school graduation rate

by 3.6 percentage points for males and by 2.6 percentage points for females. Conversely, a 1997 increase in the GED minimum score requirements of several states reduced the dropout rate among black and Hispanic 12th graders by 4.4 and 7 percentage points, respectively.

These displacement effects matter because, on average, GED recipients do not fare as well in the labor market and in post-secondary education as conventional high-school graduates. The poor track record of GED recipients reflects weaknesses in socioemotional skills such as motivation and persistence, skills that high school graduates demonstrate by completing course requirements. Heckman and Yona Rubinstein have

In response to the slow rate of economic growth after 1973, states took a number of actions to improve the skills of students graduating from public high schools. Nineteen states introduced minimum competency tests for graduation. These early steps were followed by increased course requirements and more challenging exit examinations, all of which raised the cost of obtaining a high school diploma for students with weak academic preparation.

The watershed document on the quality of the nation's public school system was *A Nation at Risk*, published in 1983. The authors recommended that a condition for receipt of a high school diploma be that students complete four

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therefore characterized the GED as a “mixed signal,” one that indicates to potential employers that the recipient has mastered basic cognitive skills but is unlikely to have the socioemotional skills that result in regular attendance and punctuality, which employers generally value.

Teenagers with stronger cognitive skills leave high school for myriad reasons—they dislike school, they experience problems at home, or they are expecting a child. The modal reason they take the GED tests is to gain access to funding for postsecondary education or training. Indeed, 43 percent of GED recipients enter college or training programs within six years of obtaining the credential. However, only half of these return for the second semester, and very few complete a degree program. This explains why the GED credential provides little or no economic benefit to these recipients.

In summary, the availability of the GED credential leads some teenagers to drop out of school who otherwise would have persisted to graduation. Its increasing availability to teenagers between 1970 and 2000 likely contributed to the stagnation of the high school graduation rate.

Nonmonetary Costs

Increases in the nonmonetary cost of obtaining a high school diploma may also help explain the stagnation of the graduation rate in the three decades prior to 2000. This line of reasoning has two parts: first, requirements for earning a high school diploma increased, and second, the expanded requirements had a negative impact on the graduation rate of vulnerable groups. We consider the two parts in turn.

years of English and three years of mathematics, science, and social studies, and many states complied. By the early 1990s, attempts to improve public education had morphed into the standards-based education reform agenda, often called test-based accountability. Although details vary from state to state, standards-based education reforms typically include content standards that specify what students should know and be able to do, performance standards that specify the levels of performance students should satisfy, assessments that measure the extent to which students meet performance standards, and incentives for students and educators to meet the standards.

Although not without exceptions, the evidence generally indicates that more stringent graduation requirements reduced high school graduation rates among vulnerable groups, specifically low-achieving students (including those with learning disabilities), students of color, and urban low-income students. Thomas Dee and Brian Jacob, for example, report that exit exam requirements reduced high school graduation rates by about 2 percentage points, with larger effects in states with more difficult examinations, and with effects concentrated among black students and among students in districts with large percentages of students of color. It is important to bear in mind that states increased high school graduation requirements and introduced other aspects of standards-based education reforms in order to improve the quality of education students receive and to make a high school diploma a stronger signal of skill mastery. Advocates of standards-based education reforms can point to accomplishments. For example, comparisons of the transcripts of 1990 and 2009 high school graduates reveal that larger percentages of 2009 graduates from all major racial and ethnic

groups completed a rigorous curriculum than did comparable 1990 graduates, and, on average, 2009 graduates completed about 420 more hours of coursework than did 1990 graduates. Nonetheless, the imposition of stricter requirements does appear to have played a role in reducing graduation rates for vulnerable groups.

Explaining the Rise

If increases in high school graduation requirements during the last quarter of the 20th century contributed to the stagnation in graduation rates, why did rates rise during the first decade of the 21st century, a period in which high school graduation requirements were not reduced and in some states were increased? By the 2011–12 school year, 70 percent of all public high-school students had to pass at least one exit examination to obtain a high school diploma, a hurdle that may certainly have precluded some students from graduating.

To our knowledge, there is no compelling explanation for the overall growth in the 2000s or for the especially large increases in the graduation rates of black and Hispanic students. Yet evidence from the National Assessment of Educational Progress (NAEP) provides some clues. Figure 3 displays trends by racial or ethnic group between 1978 and 2008 in mathematics and reading scores for 13-year-olds from the NAEP Long-Term Trend Assessment. We focus on the scores of students at the 25th percentile of the distribution of achievement for each group, because it is low-performing students who are at greatest risk of not graduating from high school.

The 25th percentile math score for black 13-year-olds was virtually unchanged between 1986 and 1999. In contrast, between 1999 and 2008, it rose by approximately

Hispanics fell by 0.25 and 0.13 standard deviations, respectively. Between 1996 and 2008, the corresponding scores increased by 0.36 and 0.11 standard deviations.

Thus, evidence from the NAEP indicates improvement over the last 10 to 15 years in reading and mathematics achievement among students entering high school at the bottom of the skill distribution. This may have reduced the nonmonetary costs of completing high school graduation requirements. Moreover, the impact may have been particularly great for black and Hispanic students larger shares of whom enter high school with weak mathematics skills than of white students.

Schools or Society?

It is not clear why the academic skills of 13-year-olds at the bottom of the skills distribution have risen. It could be the result of improved schooling in Grades K–8, perhaps due to the standards-based reform efforts discussed above.

However, it could also stem from improvements in the out-of-school circumstances of American children most at risk of academic failure.

Between 1980 and 2000, the fraction of U.S. four-year-olds enrolled in classroom-based preschool programs rose from one-half to two-thirds. This trend could have resulted in more children acquiring the cognitive and socioemotional skills needed for success in school.

In addition, the birth rate among 15- to 17-year-old girls declined by 44 percent between 1990 and 2008, and by 60 percent among black teens. Because children born to teenage mothers are prone to develop problems that inhibit academic success, this trend could have contributed to both the increases in the mathematics skills of 13-year-olds and to

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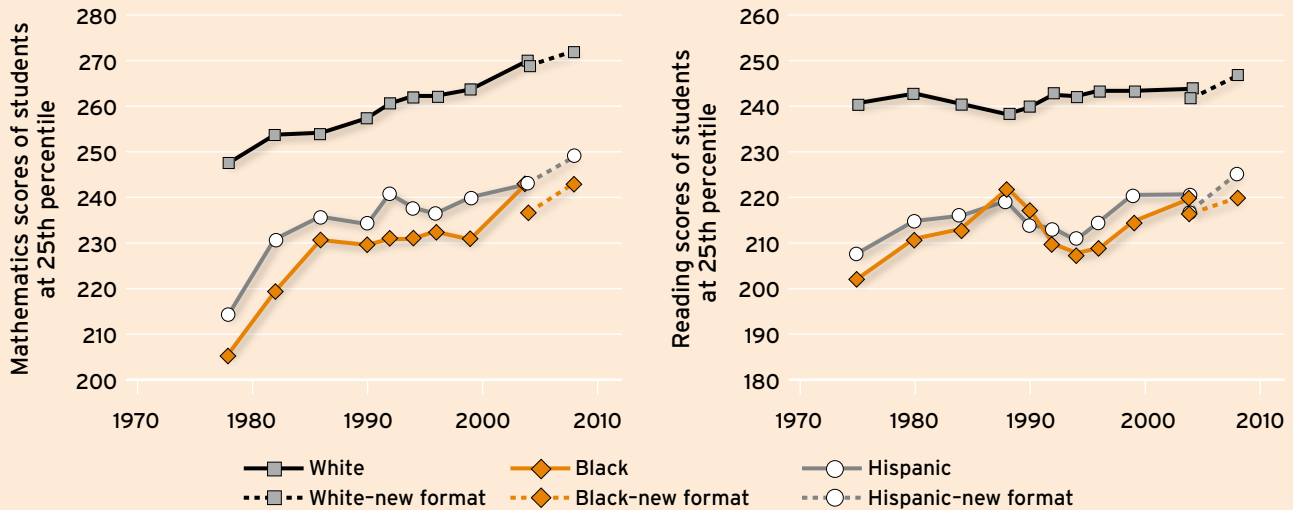
0.35 standard deviations, equivalent to more than a full grade level. The pattern for Hispanics is similar, with the 25th percentile math score remaining almost unchanged between 1986 and 1996, and then increasing by 0.38 standard deviations between 1996 and 2008. The 25th percentile mathematics score for 13-year-old white students also increased, but by just 0.29 standard deviations over the same period. The trends in 13-year-old reading scores are somewhat different, but equally striking. Between 1988 and 1994, the 25th percentile reading score of blacks and

an increase in the high school graduation rate. Moreover, the decline in the teenage birth rate could have reduced the number of girls who left school to care for children and thus resulted in higher graduation rates.

Yet another salutary trend is a 47 percent decline between 1994 and 2009 in the arrest rate of teenagers for violence-related offenses. One of several reasons this could have contributed to a rise in the high school graduation rate is that involvement with the criminal justice system typically results in a marked increase in absences from school.

Dropout Risk Reduction (Figure 3)

Long-term NAEP scores for 13-year-olds show that by the late 1990s low-performing students were better prepared upon entering high school.



Note: Several changes were made to the design of the long-term trend assessment in reading and mathematics beginning with the 2004 administration.

SOURCE: Authors' tabulations of data from the NAEP

Finally, it is possible that the introduction of more difficult GED examinations in 2002, which resulted in a temporary decline in the number of 16- to 18-year-olds obtaining the credential, contributed to the increase in the high school graduation rate during the decade ending in 2010. In 2002, after the GED Testing Service introduced a more difficult set of GED tests, the percentage of high school completers receiving the GED dropped from 17 to 10 percent. Since 2004, it has held steady at about 12 percent, again with about half of GEDs going to 16- to 20-year-olds.

Conclusions

Understanding the role of school improvement efforts and nonschool factors will be important to designing policies that contribute to continued increases in educational attainment, especially if new requirements tied to the Common Core standards raise graduation requirements further.

An assumption implicit in existing state education policies is that the quality of schooling will improve sufficiently to enable high school graduation rates to rise even as graduation requirements are stiffened. It has proven much more difficult to improve school quality than to legislate increases in graduation requirements, however. One reason is that a large percentage of the economically disadvantaged students most affected by the more stringent graduation requirements enter school with weak cognitive and socioemotional skills, which tend to trail them throughout their school careers.

Economically disadvantaged students also tend to be concentrated in a subset of the nation's schools where peer group influences hinder a positive learning environment. Conventional comprehensive high schools do not engage the interest and effort of many teenagers, especially those who enter with weak skills. Finally, graduation rates may be depressed by the use of the GED option by a significant number of students, particularly black and Hispanic students, in some cases with encouragement from high school staff.

Raising the high school graduation rate will require a set of complementary investments and structural changes in the education system. Investments aimed at improving the school readiness of economically disadvantaged children are critical. So are policies to increase the quality of teaching in schools serving high concentrations of poor children so they do not enter 9th grade without the skills and behaviors to succeed in high school. Finally, it seems important to create a variety of high school options for students, including ones that provide significant experiences in workplace settings, and clear connections between the skills students are asked to master and access to jobs that make use of these skills.

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