

Catching Up To College and Career Readiness

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Policy discussions about preventing and closing academic preparation gaps should be informed by a realistic view of the difficulty of closing these gaps.

Introduction

In recent years educators and policymakers have set a goal that students graduate from high school ready for college and careers. However, as a nation we are far from achieving this goal, particularly for low-income and minority students. For example, in states where all eleventh-graders take the ACT®, only 27 percent of low-income students in 2010 met the ACT College Readiness Benchmark in reading, with 16 percent meeting the Benchmark in mathematics, and 11 percent meeting the Benchmark in science.¹

Efforts to improve students' academic preparation have often been directed at the high-school level, although for many students, gaps in academic preparation begin much earlier. Large numbers of disadvantaged students enter kindergarten behind in early reading and mathematics skills, oral language development, vocabulary, and general knowledge. These gaps are likely to widen over time because of the "Matthew effects," whereby those who start out behind are at a relative disadvantage in acquiring new knowledge.

Policy discussions about preventing and closing academic preparation gaps should be informed by a realistic view of the *difficulty* of closing these gaps. The more difficult and time-consuming it is to close the gaps, the more important it is to start the process earlier. Underestimating the time and effort required could lead educators and policymakers to underfund prevention efforts and choose intervention strategies that are too little and too late. Underestimating the difficulty could also lead policymakers to hold schools to unrealistic accountability targets, creating strong incentives at various levels in the system to lower standards and artificially inflate test scores. On the other hand, overestimating the difficulty could lead educators and policymakers to give up on students.

This report uses information on the percentage of students reaching college and career readiness targets over a four-year period as an indicator of the difficulty of doing so. The report focuses on students who start out far off track—well below the achievement level that those with average growth trajectories need to reach college and career readiness targets in a specified later grade. We focus on closing academic preparation gaps over two four-year periods:

Grades 8-12: How many students who are far off track in eighth grade reach college readiness benchmarks by twelfth grade?

Grades 4-8: How many who are far off track in fourth grade catch up by eighth grade?

¹ These percentages would likely be still lower if the college and career readiness of dropouts was included.

2. Catching Up in Grades 8–12

How many students are far off track in eighth grade?

In the 2009–10 school year EXPLORE® was administered to almost 800,000 eighth-grade students nationwide. For the purposes of this study, we divided students into three academic preparation groups in each subject based on their performance on EXPLORE in that subject:

- **On Track** students met the College Readiness Benchmark on EXPLORE (Figure 1) in the subject.
- **Off Track** students missed the Benchmark by one standard deviation or less.
- **Far Off Track** students scored more than a full standard deviation below the Benchmark.

For example, a score of 15 or better in EXPLORE Reading indicated a student was On Track; Off Track students scored from 12 to 14, while students scoring 11 or below were classified as Far Off Track.²

Figure 1: ACT's College Readiness Benchmarks

	EXPLORE	PLAN	ACT
English	13	15	18
Mathematics	17	19	22
Reading	15	17	21
Science	20	21	24

Figure 2: Academic Preparation of 2009–10 Eighth-grade EXPLORE Test Takers

Student Academic Preparation	Reading			Mathematics			Science		
	All Students	African American Students	Hispanic Students	All Students	African American Students	Hispanic Students	All Students	African American Students	Hispanic Students
On Track <i>Met or exceeded College Readiness Benchmark</i>	43%	24%	26%	37%	15%	21%	16%	4%	7%
Off Track <i>No more than one standard deviation below Benchmark</i>	30%	33%	32%	35%	35%	37%	32%	21%	26%
Far Off Track <i>More than one standard deviation below Benchmark</i>	27%	43%	42%	28%	50%	41%	52%	74%	67%

² The size of a standard deviation on EXPLORE in 2010 was 3.9 points in reading, 3.9 points in mathematics, 4.2 points in English, and 3.3 points in science. See Dougherty & Fleming (2012).

³ For example, using “Below Basic” on the National Assessment of Educational Progress (NAEP) as an indicator of “Far Off Track,” in 2009 roughly one-fourth of eighth-grade students overall and 40–50 percent of African American and Hispanic students were Below Basic in reading and mathematics. In science, about one-third of students overall but a clear majority of African American and Hispanic students were Below Basic.

The bottom row of Figure 2 shows that just over one-fourth of all eighth-grade students taking EXPLORE were Far Off Track in reading and mathematics (27 and 28 percent, respectively). The corresponding proportions for African American and Hispanic students were in the 40–50 percent range. These statistics are similar to other estimates of the prevalence of poor academic preparation among eighth-grade students.³

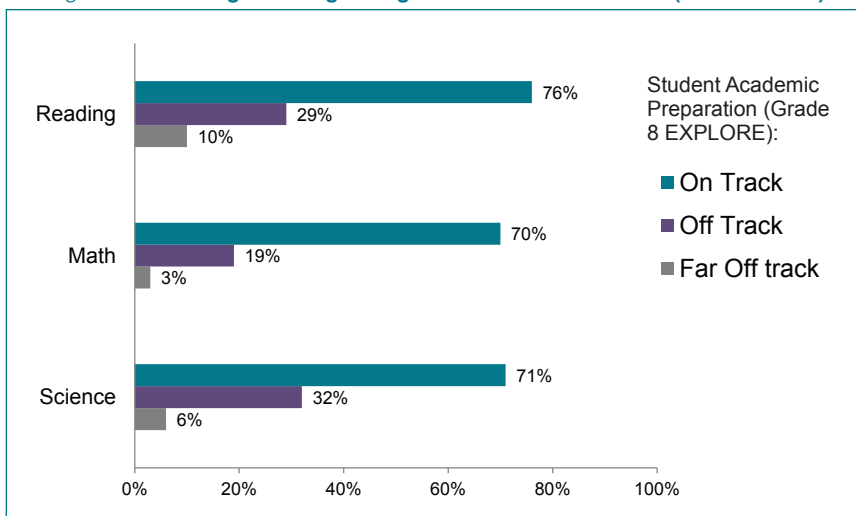
What percentage of Far Off Track eighth-graders catch up in four years?

To address this question, we analyzed data from a nationwide sample of approximately 391,000 students from four cohorts who took EXPLORE in eighth grade, PLAN in tenth grade, and the ACT in twelfth grade.⁴ In the

sample, only about 10 percent of Far Off Track eighth-graders reached the College Readiness Benchmark for reading in Grade 12 (*Figure 3*). Similarly, only a small percentage of Far Off Track eighth-graders reached the Grade 12 Benchmarks in mathematics (3 percent) and science (6 percent). A greater percentage of Off Track students reached the Benchmarks in Grade 12, with 29 percent in reading, 32 percent in science, and 19 percent in mathematics. By contrast, the majority of On Track eighth-graders were college and career ready in Grade 12.

It should be noted that the students in the study sample were a relatively select group, staying in high school and taking three different college readiness tests (i.e., EXPLORE, PLAN, and ACT).⁵ This could mean that they were academically more motivated than a randomly chosen national sample of eighth-grade students from each academic preparation group. If so, then the results in *Figure 3* are likely to err on the optimistic side.

Figure 3: Percentage Meeting College Readiness Benchmarks (Grade 12 ACT)



What percentage of Far Off Track eighth-graders catch up in more successful high schools?

To compare results for Far Off Track students in more successful high schools with those in average performing schools, we ranked schools based on the percentage of Far Off Track eighth-grade students who met College Readiness Benchmarks in twelfth grade. We identified the top 10 percent of schools in each subject and compared their results with the average of all schools in that subject.⁶ The results of this analysis are shown on the following page in *Figure 4a*. The more successful schools were able to get 28, 14, and 19 percent of their Far Off Track eighth-graders to College Readiness Benchmarks by twelfth grade in reading, mathematics, and science, respectively.

Schools serving lower poverty (more advantaged) student populations predominated in the top 10 percent of schools in *Figure 4a*. To examine the performance of the more successful schools serving disadvantaged students, we divided high schools into two categories based on student poverty rates: higher poverty schools with more than 50 percent economically disadvantaged students and lower poverty schools with 50 percent or fewer of those students. Economically disadvantaged students were defined as those eligible for the free and reduced price lunch program.⁷ We ranked schools within these two income categories based on the percentage of Far

⁴ Students in the four cohorts took EXPLORE in the 2002-03, 2003-04, 2004-05, and 2005-06 school years, taking PLAN two years later and the ACT four years later. For convenience, we label the cohorts based on the spring of Grades 8 and 12: the 2003-07, 2004-08, 2005-09, and 2006-10 cohorts. For the analysis in this report, we used the most recent ACT scores of students who took that test at least once in Grade 12. Inclusion of students who took the ACT for the last time in Grade 11 did not significantly change the study results (Dougherty & Fleming, 2012).

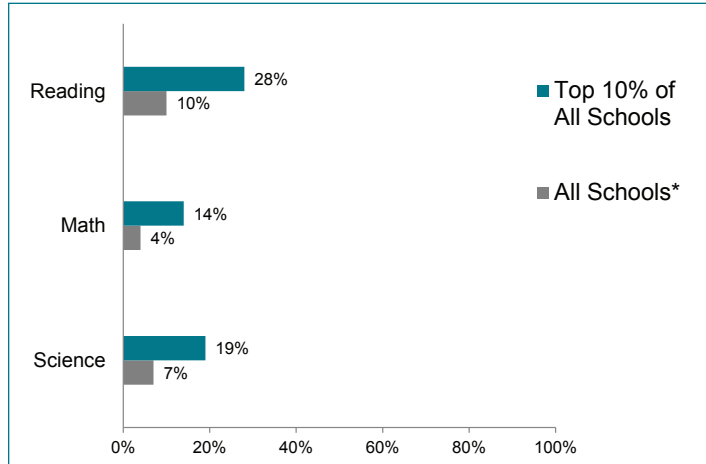
⁵ The study sample had a lower percentage of students who were Far Off Track on eighth-grade EXPLORE, compared to the percentage of Far Off Track students found among all eighth-grade EXPLORE takers. This is evidence of the selectivity of the study sample (Dougherty & Fleming, 2012).

⁶ Schools were ranked based on the performance of Far Off track students in the most recent two cohorts (2005-09 and 2006-10). Schools were required to have at least 10 Far Off Track students in each cohort and at least 30 such students across both cohorts combined.

⁷ Source of this data for the 2008-09 school year came from the U.S. Department of Education's Common Core of Data.

Percentage of **Far Off Track** Eighth-grade Students Meeting College Readiness Benchmarks on Grade 12 ACT
(By School, Poverty and Performance Level)

Figure 4a: **All Schools**



* These statistics are not identical to those in Figure 3 because: 1) Figure 3 covers four student cohorts, whereas Figure 4a depicts the two more recent of those cohorts (2005–09 and 2006–10) in order to maximize the number of schools that had data from every cohort; and 2) Figure 4a depicts only schools with at least 10 Far Off Track students in each cohort and 30 students in both cohorts.

Figure 4b: **Higher Poverty Schools**
(>50-100% Economically Disadvantaged Students)

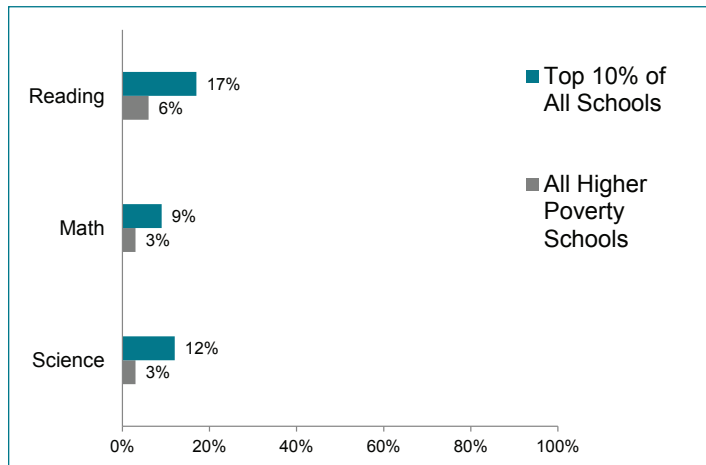
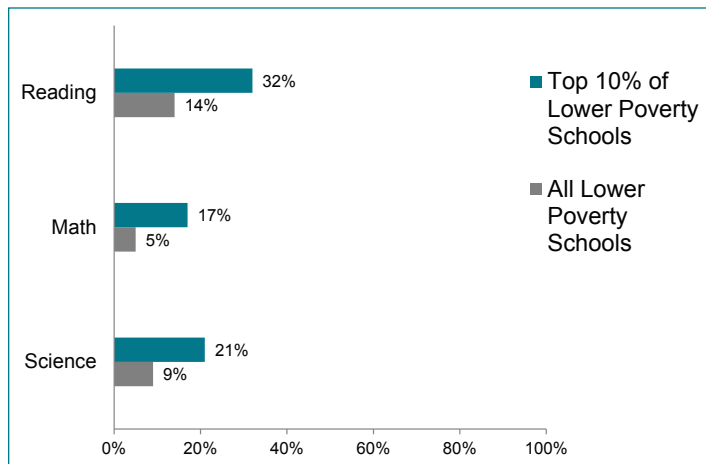


Figure 4c: **Lower Poverty Schools**
(0-50% Economically Disadvantaged Students)



Off Track eighth-graders who met College Readiness Benchmarks in twelfth grade. We identified the top 10 percent of schools in each income category and compared their average results with the average of all schools in the category.

The top 10 percent of higher poverty high schools were able to increase the percentage of students meeting benchmarks from 6 to 17 percent in reading, 3 to 9 percent in mathematics, and 3 to 12 percent in science (Figure 4b). It is noteworthy that the more successful higher poverty schools outperformed the average for lower poverty schools, which averaged 14 percent of Far Off Track students meeting the ACT benchmark in reading, 5 percent in mathematics, and 9 percent in science (Figure 4c).

These results are consistent with the findings in *The Forgotten Middle* (ACT, 2008) about the importance of preparing students before eighth grade. Waiting until high school to address preparation gaps is too late for the majority of students who have fallen behind, particularly those who are Far Off Track. Catching up those students is a daunting challenge even for the most effective high schools.

3. Catching Up in Grades 4–8

If catching students up in high school is difficult, perhaps it is easier to catch them up earlier. To investigate this question, we identified a state, Arkansas, whose fourth-grade state test results could be matched to the same students' eighth-grade EXPLORE scores. We classified those students as On Track, Off Track, and Far Off Track based on their fourth-grade scores.⁸

How many students were Far Off Track in fourth grade?

In the spring of 2010, the Arkansas Benchmark Exams (ABE) in literacy and mathematics were administered to about 36,000 fourth-grade students. (The literacy test measured a combination of reading and writing.) About one-fifth of students—18 and 22 percent, respectively—were Far Off Track in literacy and mathematics, but these percentages were substantially higher for African American and Hispanic students (Figure 5).

Figure 5: Student Academic Preparation Levels
2010 Fourth-grade Arkansas Benchmark Exam

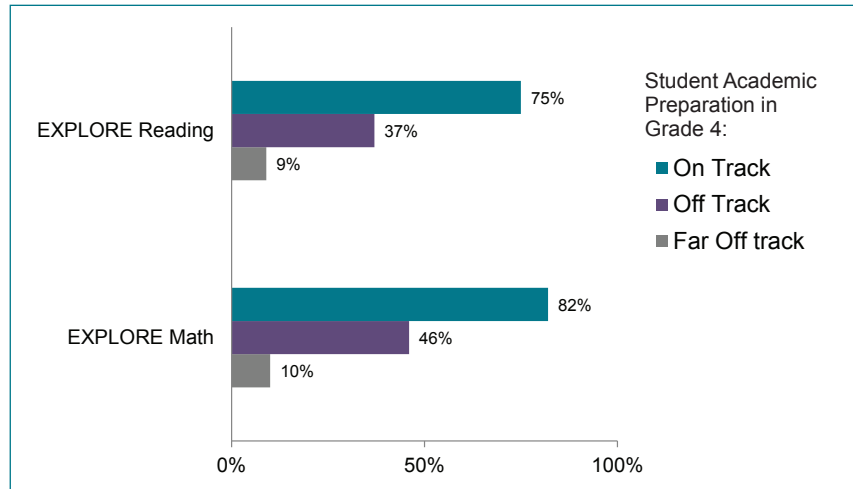
Student Academic Preparation	Literacy			Mathematics		
	All Students	African American Students	Hispanic Students	All Students	African American Students	Hispanic Students
On Track	46%	28%	33%	45%	25%	38%
Off Track	37%	43%	43%	33%	37%	36%
Far Off Track	18%	29%	24%	22%	38%	26%

What percentage of Far Off Track fourth-graders catch up in four years?

To examine the percentage of Far Off Track fourth-grade students reaching college and career readiness targets by eighth grade, we used a sample of about 38,000 students who took the fourth-grade ABE in 2004-05 or 2005-06,

⁸ This required identifying target scores for On Track students on the fourth-grade Arkansas Benchmark Exams in literacy and mathematics based on a link to the eighth-grade EXPLORE tests in reading and mathematics. See NCEA/ACT (2011) and Dougherty & Fleming (2012).

Figure 6: Percentage Meeting College Readiness Benchmarks (Grade 8 EXPLORE)



and the eighth-grade EXPLORE four years later. As with the eighth-grade sample followed through twelfth grade, Far Off Track fourth-graders had a low chance of reaching College Readiness Benchmarks in eighth grade—only a 9 percent chance in eighth-grade reading and a 10 percent chance in eighth-grade mathematics (*Figure 6*). Off Track students had a somewhat higher chance with 37 percent in reading and 46 percent in mathematics, while On Track fourth-graders had a 75 percent probability in reading and 82 percent chance in mathematics of staying On Track in eighth grade.

Comparing *Figures 3* and *6*, success rates with each group of students in mathematics were somewhat higher in grades 4–8 than in grades 8–12, suggesting it may be easier to catch students up in that subject by starting earlier. However, the same pattern did not hold consistently in reading. Data from additional states may shed further light on the relative difficulty of catching up in earlier and later grades.

What percentage of Far Off Track fourth-graders catch up in more successful schools?

To compare results for Far Off Track students in more successful schools with those in average performing schools, we ranked schools with eighth-grade students based on the percentage of Far Off Track fourth-grade students who met College Readiness Benchmarks on EXPLORE in eighth grade. We identified the top 10 percent of schools in each subject and compared their results with the average of all schools in that subject.⁹

More successful schools were able to get 21 and 23 percent of previously Far Off Track Students to College Readiness Benchmarks in eighth grade (*Figure 7a*). As was the case in high school, schools serving more advantaged students were disproportionately well represented in the top 10 percent of schools.

As with the eighth-grade analysis, to examine the performance of the top middle schools and feeder elementary schools serving disadvantaged students, we divided the middle schools into two categories (higher poverty and lower poverty schools) and ranked schools within these two income categories based on the percentage of Far Off Track fourth-graders who met

⁹ Schools with eighth-grade students were ranked based on the performance of Far Off Track students in the 2005-2009 and 2006-2010 cohorts. Schools were required to have at least 10 Far Off Track students in each cohort, and at least 30 such students across both cohorts combined. In cases where students spent part of their time in elementary school between fourth and eighth grade, this success measure pertains to a combination of middle or junior high schools and their feeder elementary schools. Thirty percent of the students in this sample transitioned to a new school in sixth grade, 55 percent in seventh grade, 7 percent in eighth grade, and 7 percent stayed in the same school between fifth and eighth grades.

Figure 7a: All Schools

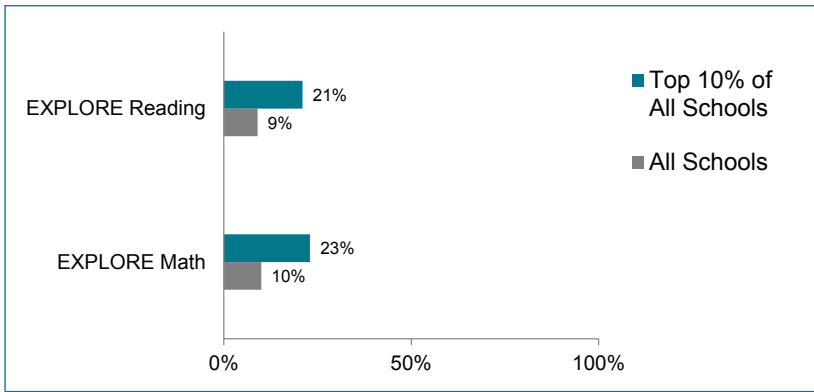


Figure 7b: Higher Poverty Schools (>50-100% Economically Disadvantaged Students)

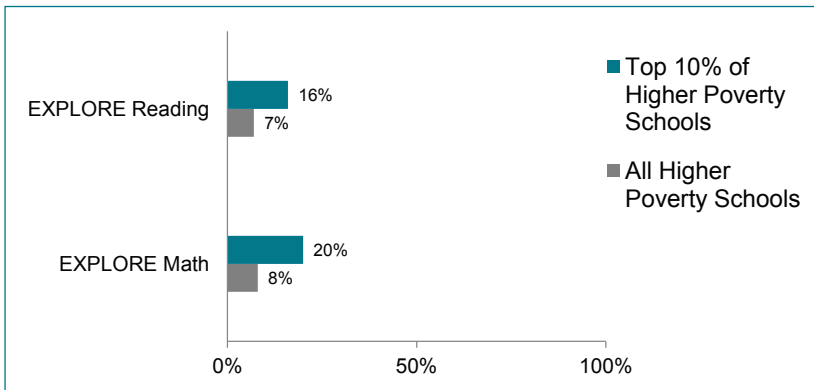
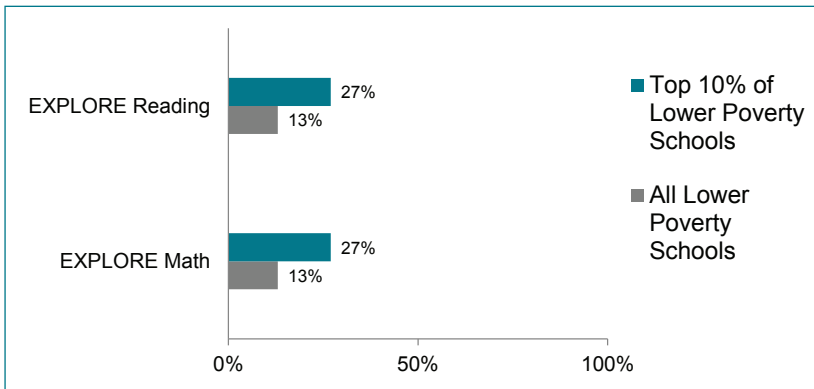


Figure 7c: Lower Poverty Schools (0-50% Economically Disadvantaged Students)



College Readiness Benchmarks in eighth grade. We identified the top 10 percent of schools in each income category and compared their average results with the average of all schools in the category.

The top 10 percent of higher poverty schools were able to increase the percentage of students meeting benchmarks from 7 to 16 percent in literacy/reading and 8 to 20 percent in mathematics (Figure 7b). As was the case in high school, the more successful higher poverty elementary-middle school combinations outperformed the average for lower poverty schools. For the latter group, 13 percent of Far Off Track fourth-grade students met benchmarks in eighth-grade reading and mathematics (Figure 7c).

Even if starting earlier does not reduce the amount of time it takes to catch students up, starting earlier gives students more time to do so.

Conclusion

In the datasets in the study, relatively few Far Off Track students in eighth grade were On Track four years later. Even the more successful higher poverty high schools typically raised fewer than 20 percent of those students to College Readiness Benchmarks by twelfth grade. Results starting in fourth grade were similar, with a hint that catching students up in mathematics may be easier in the middle grades than in high school.

These results are consistent with the general view that catching students up from far behind is difficult and time-consuming. That underscores the importance of an early start and an emphasis on prevention over remediation. Specifically, educators and policymakers should consider the following as they take a long-term approach to preparing students:

1. Efforts to close academic preparation gaps should begin as early as possible, be more intensive, and take as long as necessary. Even if starting earlier does not reduce the amount of time it takes to catch students up, starting earlier gives students more time to do so. Thus, early monitoring of student progress is essential to ensure that needed interventions begin soon enough.
2. School systems should emphasize approaches likely to have a broad positive effect on the entire student population when sustained over multiple years. For example, educators can give all students a content- and vocabulary-rich curriculum beginning in the early years (Common Core State Standards Initiative, 2010; ACT, 2012b). Such a curriculum is the basis for preparing students long-term for college and careers. Educators can also use a comprehensive framework of best practices, such as the Core Practice Framework, to ensure that such a curriculum is effectively taught (ACT, 2012a; ACT, 2012b).
3. School systems should evaluate programs for middle and high school students based on the programs' effectiveness with students with different initial levels of academic preparation. A program that works well with Far Off Track students may be less effective with On Track students, and vice versa. When a new policy or program is proposed, educators and policymakers should inquire about the assumptions made about the academic readiness of students enrolling in the program.
4. In general, policy and practice should be informed by data on the success of real students in actual schools. This applies especially to the requirements that local, state, and federal accountability systems place on schools. For example, reasonable growth goals might be set based on student performance in more successful schools (ACT, 2010; ACT, 2012c), and goals for percentages of students reaching college and career readiness should take into account the students' starting points and the number of years the school has available to catch them up. ■

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