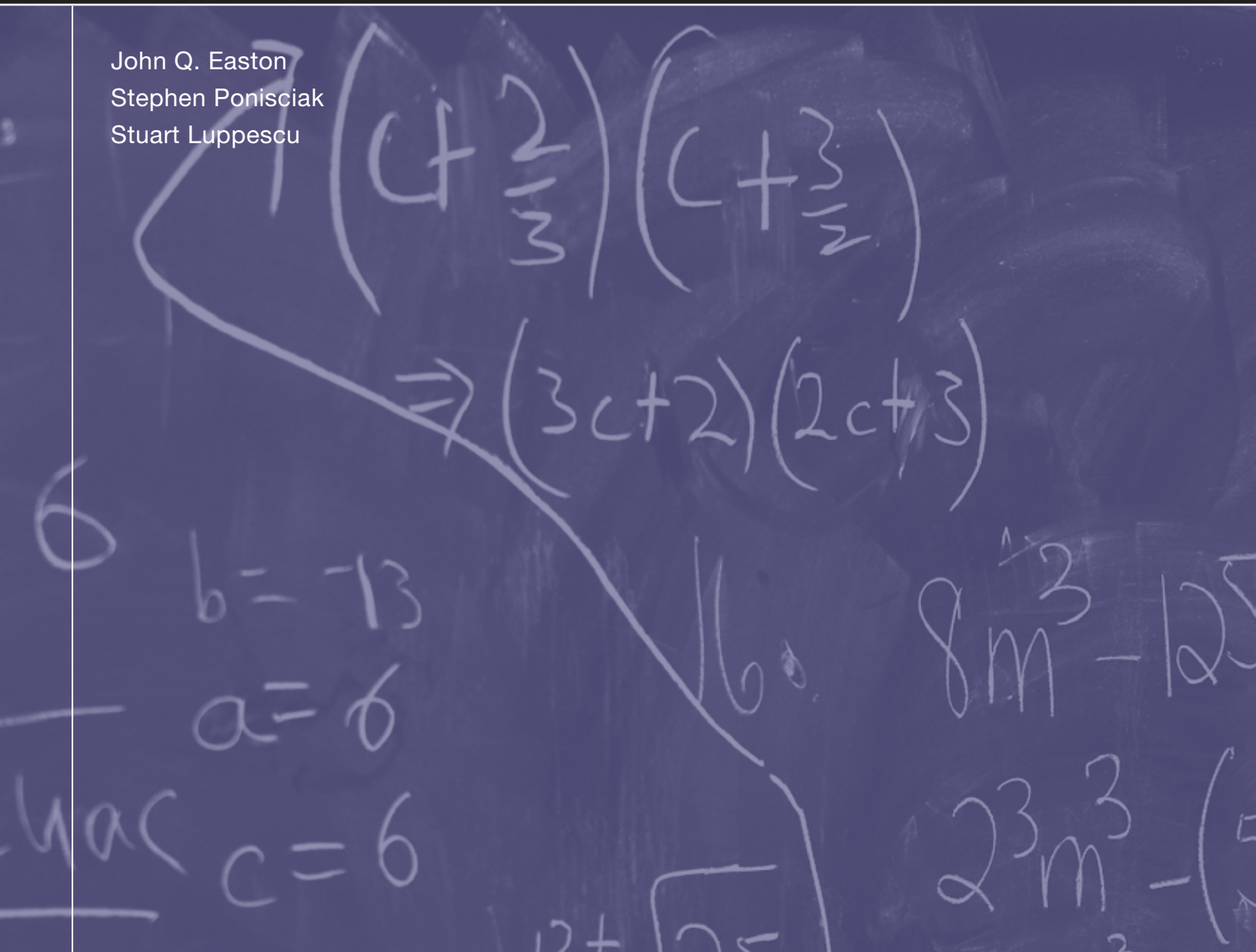


From High School to the Future: The Pathway to 20

John Q. Easton
Stephen Ponisciak
Stuart Luppescu



Acknowledgements

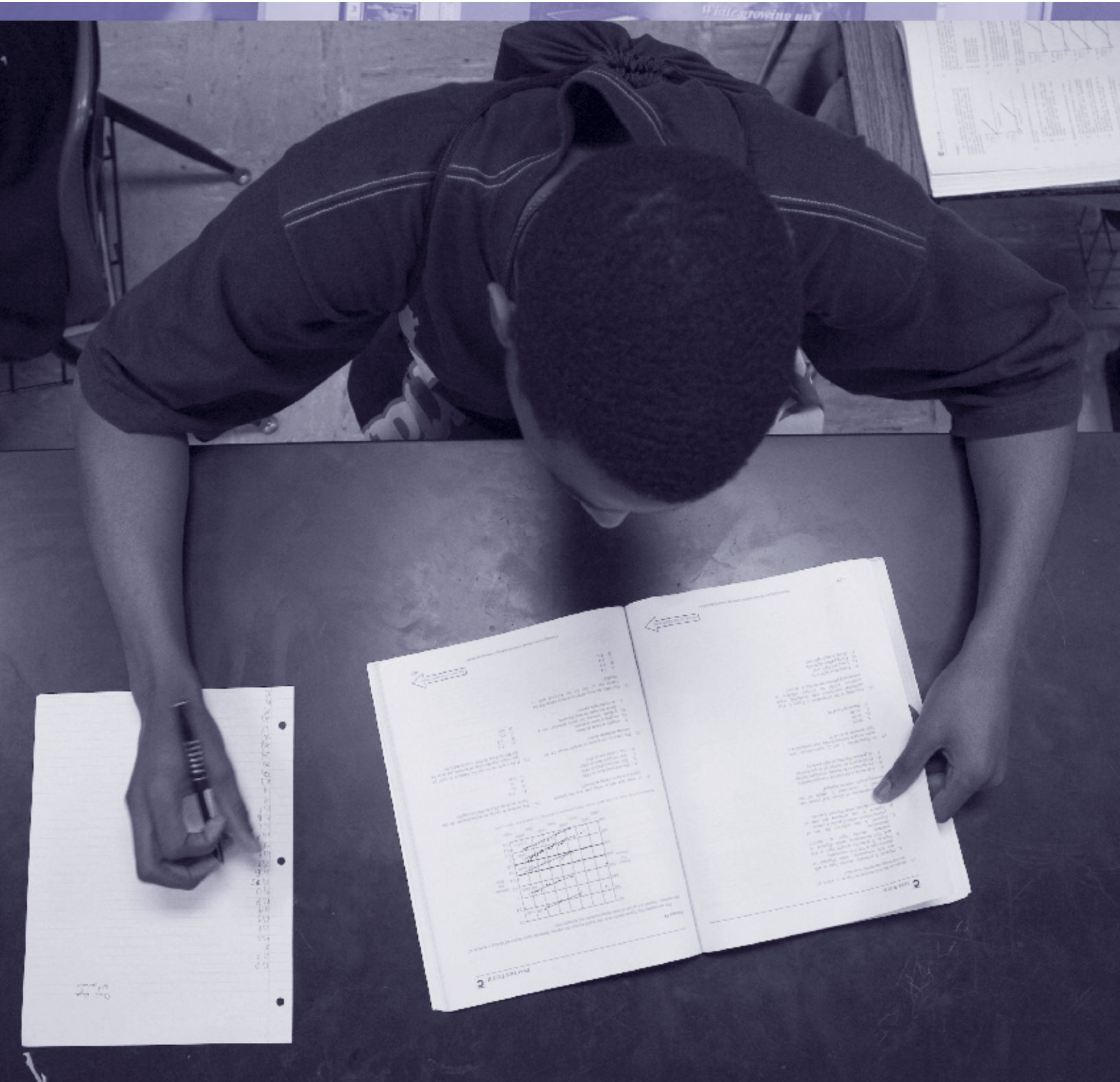
This paper was inspired by analyses conducted here at the Consortium on Chicago School Research (CCSR) and presented to senior leadership of the Chicago Public Schools (CPS) on two occasions in 2007. CPS leaders established a new goal in 2007 to have their high school juniors reach a score of 20 on the ACT, and asked us to look deeper at the students who reached—and did not reach—this goal. We thank them for their openness and interest in pursuing this topic, and for inviting us to share this information more broadly.

Thanks to our colleagues at CCSR for their input, advice, and assistance, and especially to Elaine Allensworth and Melissa Roderick for generously allowing us to repeat, paraphrase, and borrow from their own research studies on related topics. Tracy Dell'Angela, Penny Sebring, and Sue Sporte also provided extensive feedback. Steering Committee members Lynn Cherkasky-Davis, Arie van der Ploeg, Steve Washington, and Kim Zalent made helpful comments and suggestions. Finally, we gratefully acknowledge CPS for providing the data that allowed us to do this work.

This study was supported by grants from the Bill & Melinda Gates Foundation, John D. and Catherine T. MacArthur Foundation, and the Spencer Foundation.

Table of Contents

Introduction	1
Chapter 1: <i>ACT Scores in Chicago: Reaching for a Goal of 20</i>	3
Chapter 2: <i>How CPS Students Stay on the Pathway to 20</i>	13
Chapter 3: <i>Interpretive Summary</i>	19
References	23
Endnotes	25



Introduction

This report is part of a series of studies related to college going by Chicago Public Schools (CPS) students. Preparing more students for college has been a hallmark of the current CPS administration, as evidenced in the creation of the Department of Postsecondary Education and Student Development, its implementation of many programs designed to help more students reach and succeed in college, and the system-wide goal of increasing the number of students with scores close to the national and state averages. This study looks closely into the CPS goal of having more students score 20 or better on the ACT. Part I examines the relationship between prior test scores including PLAN, EXPLORE, and the eighth grade ISAT—and ACT scores—and finds that scores on the earlier tests are highly predictive of ACT scores (see page 6 for explanation of tests). To the surprise of many, though, we also find that most students who meet the state standards on the eighth grade ISAT have little chance of reaching 20 on the ACT. Only students who reach the Exceeds Standards category have a good chance of scoring a 20 or better. This suggests major misalignment between our expectation for what students should know and be able to do at the end of elementary school and whether or not they are on track for college readiness. Part II of this study reviews some previous Consortium on Chicago School Research (CCSR) research on what matters for receiving good scores on the ACT and also introduces some new findings on this topic. Both the prior and current research clearly identify two major factors that influence ACT scores. Regardless of their background or previous test scores, students score higher on the ACT when they attend high schools with strong academic cultures and when they have high academic performance as evidenced by good grades. Students have better ACT scores when they attend good high schools, as we describe further in this report, and when they successfully engage in coursework.

Chapter 1

ACT Scores in Chicago: Reaching for a Goal of 20

As more and more high school students across the country aspire to attend and graduate from college, educators are looking more closely at the factors that facilitate or hinder college going. Researchers at the Consortium on Chicago School Research (CCSR) have very carefully examined the process of preparing for postsecondary education in Chicago Public Schools (CPS) and have released three significant studies on the topic. The first, *From High School to the Future: A First Look at Chicago Public School Graduates' College Enrollment, College Preparation, and Graduation from Four-year Colleges*, found that far too many CPS high school students were simply not prepared to attend college because of chronically low grades and test scores.¹ These students had neither the academic preparation for college nor the “habits of mind” needed for independent and challenging college courses.

The second study, *From High School to the Future: Potholes on the Road to College*, showed that even well prepared high school students stumbled on the roadway to college because of lack of information and lack of access to knowledgeable and helpful people to guide them.² Many of those who did make it to college often enrolled in weak institutions in spite of having the qualifications for attending better colleges. The most recent study, *From High School to the Future: ACT Preparation—Too Much, Too Late*, described the massive amount of time and energy that high school teachers and students spend in preparing for the ACT in the spring of junior year.³ Unfortunately, the test prep activities detract from high quality classroom instruction and actually have a negative impact on students' ACT

scores. This study found that academic preparation, as measured by grades in subject matter classes (English, math, science, and social science), has the strongest positive effect on ACT scores.

There are clearly two groups of students with distinct problems: one with insufficient academic preparation for college work, and another with the right academic skills but that lacks sufficient human and social capital to attend good colleges. CPS is working on both of these. To address the human and social capital problem, the CPS Department of Postsecondary Education and Student Development has instituted numerous programs to provide information and support to high school students so that they will learn more about and apply to a range of colleges. Regarding the first problem, the school district has initiated a wide range of efforts to improve student achievement in high school. Describing these programs is beyond the scope of this report, but it is clear that low test scores are a major concern for CPS and numerous efforts are underway to improve instruction and raise high school test scores.

To provide a clear goal across the many different programs working on improving student achievement, CPS is aiming to increase the number of students in each high school who achieve a composite score of at least 20 on the ACT. As a signal of the importance of this indicator, the most recent high school score cards include the percentage of students who scored 20 or higher on their ACT composite.⁴ A composite score of 20 on the ACT is somewhat lower than both the state and national average scores (20.5 for 2007 graduates in Illinois and 21.2 nation-wide).⁵ In terms of predicting future college success, an ACT score of 20 is also somewhat low. According to research conducted at ACT, students who attain specific benchmark scores on the four subject area tests will have a 50 percent chance of earning a grade of B or better in a freshman college level course and a 75 percent chance of earning a C or better. The ACT benchmark scores are 18 for English, 22 for Math, 24 for Science, and 21 for Reading. The Reading benchmark of 21 may be somewhat low. Another ACT study suggests that students need complex reading skills for college and that these are demonstrated by even higher ACT scores.⁶

Although there are no benchmark scores for composite ACT scores, three of the four benchmarks are 21 or higher, and together they average out to about 21.⁷

CPS chose this specific score of 20, in spite of being a little lower than state and national averages and the benchmark scores, because CPS graduates with this score or better—and good grades—will have a chance of being accepted into many Illinois state universities. For example, at Southern Illinois University at Edwardsville, Northern Illinois University, and the University of Illinois at Chicago a composite ACT score of 20 ranks at about the 25th percentile for the college class of 2005.⁸ The average freshmen at these colleges had somewhat higher ACT scores, but still a 20 would give a CPS graduate some moderate chance of gaining admission to these institutions. CPS students with a 20 on the ACT would also have access to many of the historically black colleges and universities, such as Fisk University, where the average ACT score for entering students was 20.

The aim of this report is to help CPS, its schools, and its students see what the pathway to 20 looks like and how the district can successfully guide many more students down this path. The first part of the paper describes the pathway in relation to students' previous PLAN, EXPLORE, and ISAT scores. In the second part of the paper, we draw from multiple CCSR studies and present two consistent sets of research findings. First, students do better in high schools where there is a strong academic culture. Second, students do well on the ACT when they earn good grades by responding positively to good instruction.

ACT Scores in CPS

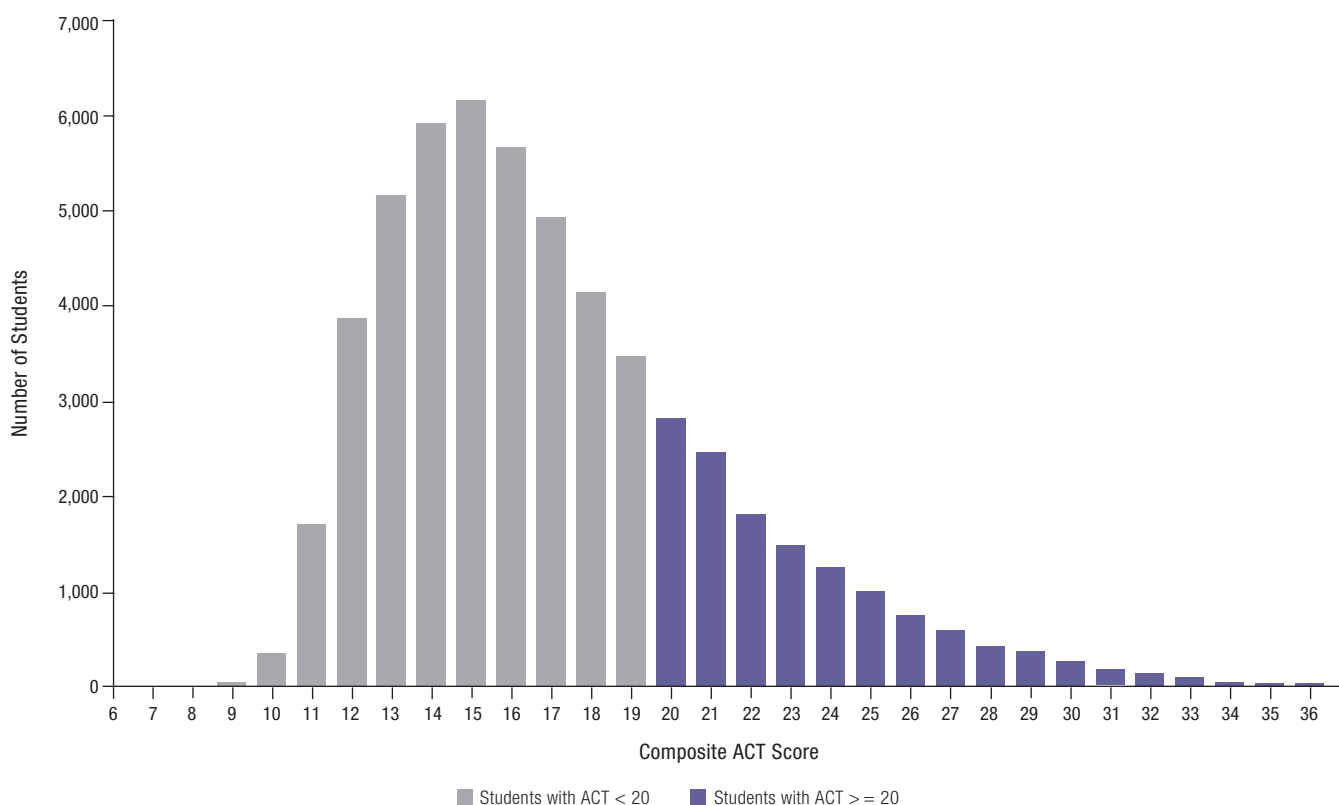
ACT scores in the Chicago Public Schools are quite low by any standard. When we combine all ACT scores from all schools in CPS from the spring 2005, 2006, and 2007 eleventh grade administrations of the Prairie State Achievement Examination, for a total of 55,221 scores, we see a skewed distribution, where most of the students receive scores on the lower end of the scale and few students receive the higher scores. The most typical score for CPS juniors in the spring of 2005, 2006, and 2007 was 15. See Figure 1.

More than half of students (52.3 percent) scored 16 or below; fewer than half (47.7 percent) scored 17 or higher. The average score was 17.2. Only one in four students—25 percent—in the combined three cohorts of students who were juniors in 2005, 2006, and 2007 scored 20 or better, the CPS goal.⁹ More than one-half (56 percent) of these relatively high achieving students were concentrated within five CPS high schools.¹⁰

If the goal were set higher, say to 21, closer to the national average (which counts mostly college-bound students), we would see only one in five or 21 percent of CPS juniors reaching that goal. If it were higher yet, say 23 (the average incoming ACT score of college freshmen at University of Illinois at Chicago, Spelman College, and Howard University, for example) we would find only 10 percent of CPS juniors scoring at

this level. Though we are stressing how low the most typical scores are in CPS, it is only fair to point out that there are many high scoring students as well. Though it is hard to see on this figure, 805 students had scores of 30 and better, with 10 CPS juniors achieving a perfect score of 36, and another 40 one point shy of perfect with a 35. In addition, the CPS average ACT scores have improved steadily for the past several years, with a slowdown in the most recent years. According to documents posted on the CPS website, the average composite ACT score has increased from 16.1 in 2001 to 17.2 in 2007.¹¹ The recent slowdown in score increases is apparent in the sample we are looking at here, where the average score was 17.1 in 2005, 17.1 in 2006, and 17.2 in 2007.

FIGURE 1
About one-quarter of CPS juniors score 20 or above on the ACT



Note: This sample includes 55,221 students who took the ACT as eleventh graders in 2005, 2006, and 2007.

Students' Scores on EXPLORE and PLAN

To understand the pathway to 20—and its detours and exits—it is helpful to look back from the ACT to see students' progress on prior tests. In addition to the ACT, all CPS high school students also take two other tests developed by ACT. These tests, the EXPLORE and PLAN, along with the ACT, make up EPAS—the Education Planning and Assessment System.¹² They are designed to measure student academic development over time and help students make decisions about important transitions in their lives—from elementary to high school and beyond into postsecondary education and the workplace. The system is intended to provide students and their families, teachers, and counselors, and school personnel with useful information to guide their decision making and planning. In CPS, all ninth graders take the EXPLORE in the fall, all tenth graders take PLAN in the fall, and all eleventh graders take the ACT in the spring.¹³

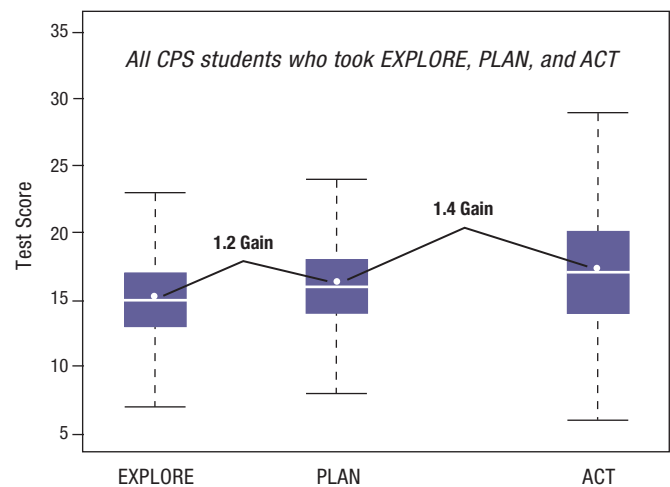
These tests are all scored on approximately the same scale to make it easy—and appropriate—to measure improvement from one test to the next.¹⁴ The tests get more difficult (and longer), moving from EXPLORE, to PLAN, to ACT; and the maximum possible scores increase correspondingly from 25 on EXPLORE, to 32 on PLAN, to 36 on ACT. ACT is considerably more difficult than both EXPLORE and PLAN, requiring more complex problem solving and critical thinking skills. *From High School to the Future: ACT Preparation—Too Much, Too Late* shows several striking examples of how the ACT makes much greater cognitive demands of students than EXPLORE and PLAN. In general, the ACT requires greater analytic skills; the ability to infer meaning from unfamiliar words and situations; and more multi-step, as opposed to single-step, problem solving.¹⁵ The study suggests that large numbers of CPS students are simply unprepared for and surprised by these demanding tasks. They have not had sufficient experiences, either in their regular classroom instruction or in test preparation activities, that require these greater cognitive demands.

In this study, we track our three cohorts of juniors back to their prior EXPLORE scores in ninth grade and PLAN scores in tenth grade. (Because CPS has

discontinued the eleventh grade PLAN, we are not including it here, though we do refer to eleventh grade PLAN later.) When we match student scores like this, we invariably “lose” students from our sample because many of them did not take all of the previous tests for any number of possible reasons. They may not have been enrolled in CPS, or they may have missed taking the test. Some students fall out of our matched sample because they are not promoted each year. Our original sample of 55,221 is reduced to 42,456 students—a drop off of about 23 percent. These students with the matched scores are a somewhat more select group than the students who do not have matched scores. This sample only includes students who were in eleventh grade in 2005, 2006, or 2007; in tenth grade the preceding year; and in ninth grade the year before (2003, 2004, or 2005). In other words, these are students who are “on-track” through eleventh grade. The mean ACT score for this matched sample is 17.6, compared to the slightly lower average of 17.2 for the full sample of ACT scores. Twenty-eight percent of these students reached 20 on the ACT, as compared to the 25 percent in the full sample.

FIGURE 2

CPS students see much smaller improvements from PLAN to ACT than students nationally



How to Read a Box Plot: Box plots display information about both the distribution and central tendency of the test scores. The median is marked by the white line in the middle of the box. The mean (arithmetic average) is the white dot inside the box. The shaded box includes the scores of the middle 50 percent of students. The top of the box marks off the score for students at the 75th percentile, and the bottom of the box marks the score for students at the 25th percentile. The lines extending up and down from the box show the range for the top and bottom scoring students. The scores of about 99 percent of all students fall between these lines.

Note: This sample includes 42,456 students who were in eleventh grade in 2005, 2006, and 2007; in tenth grade the year before; and in ninth grade the year before that.

Figure 2 shows the distribution of composite scores on the ninth grade EXPLORE, tenth grade PLAN, and eleventh grade ACT for these three combined cohorts. We use box plots to show these scores because they display information about both the distribution and central tendency of the scores. The median is marked by the line in the middle of the box. The mean (arithmetic average) is the circle. The upper bar on the box marks off the score for students in the 75th percentile, and the lower bar on the box marks the score for students in the 25th percentile.

The average EXPLORE score is 15. As the box plot shows, a full one-quarter of students score 13 or below, and only the top quarter of students score a 17 or better. (We shall see later that an EXPLORE score of 17 is an important benchmark for the goal of achieving a 20 or better on the ACT.) The average PLAN score for the same students one year later is 16.2; and, as noted, the average ACT score is 17.6. Again, even in this more select group of students who took all three tests, only somewhat more than one-quarter are reaching the goal of 20 on the ACT; and a full one-quarter of students are scoring 14 and below.

Because these scores are matched and on approximately the same scale, we can calculate the average amount of improvement that students make from one test to the next. On average, CPS students increased their scores by 1.2 points from EXPLORE to PLAN, and 1.4 points from tenth grade PLAN to eleventh grade ACT.

To help school officials and students make use of and understand the gains across EPAS, ACT publishes tables that show the scores of a large national sample of students who took EXPLORE in the fall of their ninth grade and then also took PLAN in the fall of tenth grade. The table shows how many students from national administrations of EXPLORE obtained specific PLAN scores one year later.¹⁶ CPS used these tables to create “expected gains” from EXPLORE to PLAN. The expected gain is actually the median gain achieved by all students in the national sample on PLAN for every possible EXPLORE score. For example, about 18,000 students in this national sample obtained a composite score of 14 on EXPLORE in the ninth grade. One year

later, the median PLAN score for these students was 16; so 2 points is considered the “expected gain” for an EXPLORE score of 14. In the same fashion, there are expected gains for each possible PLAN score. There is a similar table for students who took PLAN in the fall of tenth grade and then took ACT in the spring of eleventh grade.¹⁷ Again, CPS calculated expected gains for each possible PLAN score using the same technique. The expected gain is the difference between a given possible PLAN score and the median of the obtained ACT scores.

In general, there is a “U-shaped” relationship between prior score and expected gain. Very low scoring students are likely to make relatively high gains, average students make smaller gains, and the higher scoring students also make greater gains (though not as great as the lowest scoring students).¹⁸ There are expected gains in each of the four subject areas, as well as in the composite, although these are not obtained from published ACT sources. We can compare the observed gains on the composite score among CPS students to the expected gains from the ACT national sample.

As shown in Figure 2, the average composite score gain from EXPLORE to PLAN for the CPS ninth grade students is 1.2. This is slightly lower than the average expected gain for these same students of 1.3. We calculated this by averaging the expected gain for each of the 42,456 students in this matched sample.¹⁹

The average gain from PLAN to ACT for the tenth grade students shown here is 1.4. This compares unfavorably to the average expected gain of 1.9 for these same students. (Again, we calculated this average expected gain by averaging the expected gain for all of the obtained PLAN scores in the CPS sample.) The actual CPS system-wide gain from tenth grade PLAN to eleventh grade ACT is lower than the average expected gain by 0.5 points.

CPS students look only slightly worse than students nationally on EXPLORE to PLAN improvements, but they look markedly worse going from PLAN to ACT. They are not gaining in academic skills at nearly the same rate as students of comparable achievement levels across the country. Chapter 2 of this paper explores the reasons why.

Improvements from EXPLORE to PLAN to ACT

Because we want to understand more about the experiences of students who receive a composite score of 20 or better on the ACT, it is useful to examine the prior histories of those who achieved this goal. Figure 3 is much like the previous one, except that it breaks out two groups of students—those who made it to 20 and those who did not—and displays their prior EXPLORE and PLAN scores. Notice that there is no overlap of the box plots of ACT scores for the two groups of students, since these are mutually exclusive groups. (See Table 1 for more detail.) The top line represents EXPLORE, PLAN, and ACT scores for the 28 percent of the students in the matched sample who reached 20 or more. The bottom line shows the same test scores for the remaining 72 percent of students who did not

reach the desired outcome. There are several striking aspects to this graph. First and most obvious, these two groups of students are very different from each other. This is not at all surprising given that the groups were defined on the basis of their junior year ACT scores, but they also look remarkably different on their previous scores. The difference in average ACT scores for the two groups is very large—8.1 points on the ACT scale, with the stronger group of students having an average ACT composite score of 23.4 compared to the weaker group average of 15.3. This difference extends back to both the PLAN and EXPLORE as well. On PLAN, the average score for the higher scoring group is 20.1, compared to 14.7 for the lower scoring students. On EXPLORE, the top group scored 18.8 and the bottom group scored 13.6. On all three tests, these are substantial and very large differences.

Of course we expect there to be a big difference on the ACT scores since we created the two groups to be different, but the differences on PLAN and EXPLORE are also surprisingly great. The graph also points to other important and major differences between these two groups of students. It appears that both groups of students made similar gains from EXPLORE to PLAN—1.3 points for the stronger group and 1.1 for the weaker group. These differences are more marked when we compare them to average expected gains, however. The students who reached 20 on the ACT (represented as the top line in Figure 3) made greater than their average expected improvements (1.3 vs. 1.1). In contrast, the students who did not reach 20 on the ACT made less than their average expected gain (1.1 vs. 1.4).

The differences are even greater from PLAN to ACT. The students who achieved the ACT score of 20 made very strong gains from PLAN to ACT—on average they gained 3.3 points, higher than their average expected gain of 2.7. The less successful group of students gained only 0.6 points from PLAN to ACT, much less than their average expected gain of 1.6 points. These students are basically “treading water” in terms of how much they are learning in their sophomore and junior years of high school, and they are actually falling behind in terms of expected gains. So we have two groups of students who start off

TABLE 1

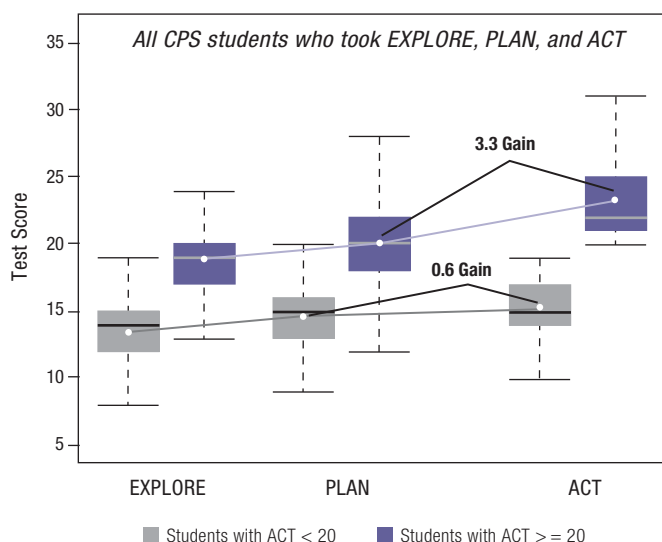
Distribution of EPAS scores and test gains from freshman to junior year

This table shows the how the middle 50 percent of students scored on the EXPLORE, PLAN, and ACT tests, as displayed in Figures 2 and 3. It reflects scores at the lower, middle, and higher ranges for three groups: all students, students who scored at least a 20 on the ACT composite, and students who scored below 20. This data includes three cohorts of students who took the ACT as juniors in 2005, 2006, and 2007.

All students	EXPLORE	PLAN	ACT
75th percentile	17	18	20
50th percentile	15	16	17
25th percentile	13	14	14
Mean	15	16.2	17.6
Students who reached 20	EXPLORE	PLAN	ACT
75th percentile	20	22	25
50th percentile	19	20	22
25th percentile	17	18	21
Mean	18.8	20.1	23.4
Students who did not reach 20	EXPLORE	PLAN	ACT
75th percentile	15	16	17
50th percentile	14	15	15
25th percentile	12	13	14
Mean	13.6	14.7	15.3

FIGURE 3

Students who score at least 20 exceed expected gains from PLAN to ACT, while lower scoring students gain very little between sophomore and junior years



How to Read a Box Plot: Box plots display information about both the distribution and central tendency of the test scores. The median is marked by the white line in the middle of the box. The mean (arithmetic average) is the white dot inside the box. The shaded box includes the scores of the middle 50 percent of students. The top of the box marks off the score for students at the 75th percentile, and the bottom of the box marks the score for students at the 25th percentile. The lines extending up and down from the box show the range for the top and bottom scoring students. The scores of about 99 percent of all students fall between these lines.

Note: This sample includes 42,456 students who were in eleventh grade in 2005, 2006, and 2007; in tenth grade the year before; and in ninth grade the year before that.

differently on EXPLORE and then the differences between them only increase over time, with the biggest increase occurring between sophomore year PLAN and junior year ACT. The groups differed by about 5 points on EXPLORE, only slightly more on PLAN, and 8 points on ACT. Clearly these two groups are having very different experiences in school, with one group learning at an accelerated pace and the other group at a much lower pace. The differences between the groups increase over time, with the greater increase occurring between PLAN and ACT.²⁰

Even though we are pointing out the differences between these two groups of students, it is also important to note that there are similarities. There are students who look relatively similar to each other on EXPLORE and PLAN scores, but who end up with different ACT scores. For example, the top quarter of students who did not reach 20 on the ACT have similar EXPLORE scores to the bottom quarter of students who did reach

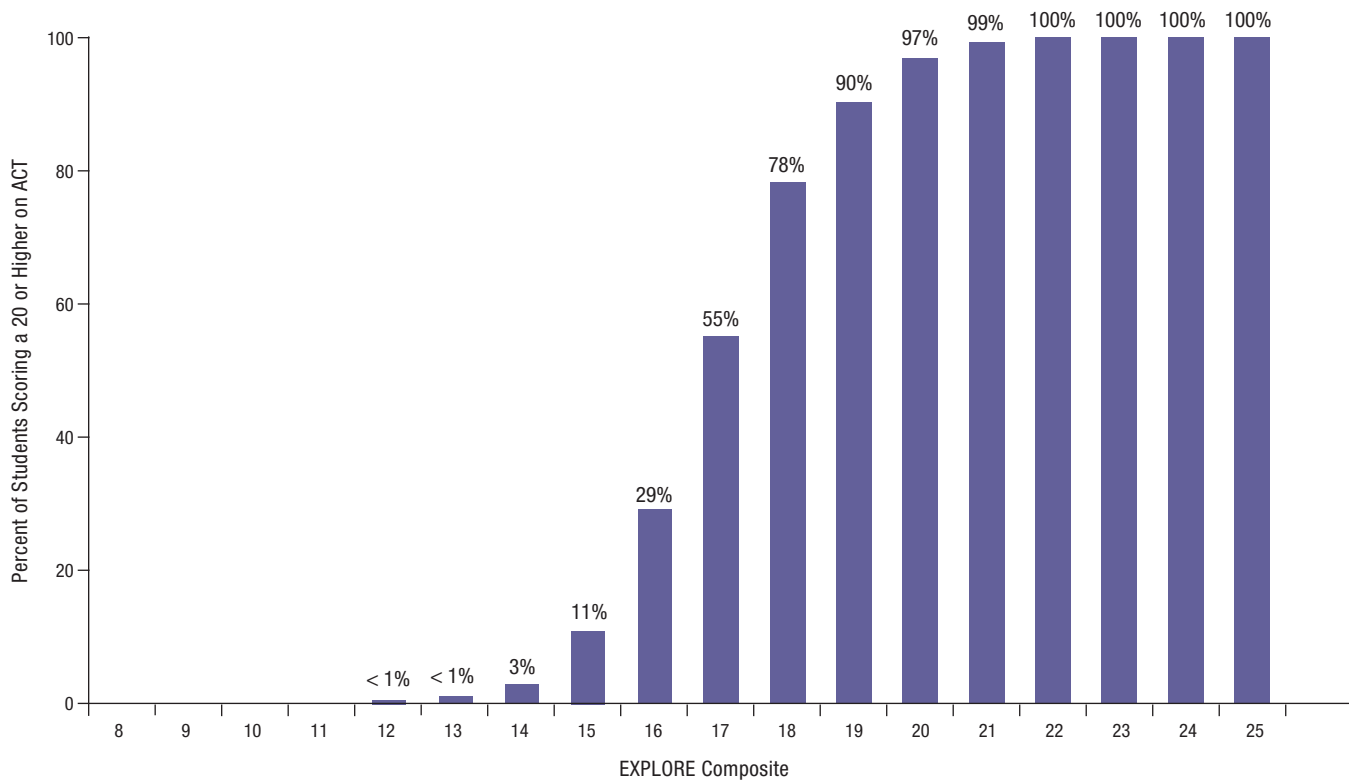
20 on the ACT. Why did two groups of comparable students end up with such different outcomes from each other? We return to this key topic in the second part of this paper to present evidence and provide an explanation of why attending a strong high school and getting good grades there lead to higher test scores

Predicting ACT Scores from Eighth and Ninth Grade Test Scores

Students' ninth grade EXPLORE composite scores say a lot about the likelihood that they will reach a 20 or better on the ACT. Virtually no students with very low scores (15 and below) on EXPLORE make it to 20 on ACT. About 30 percent of students who scored 16 on the ninth grade EXPLORE reached 20 on the ACT. An EXPLORE score of 17 is the "tipping point," where students have greater than a 50 percent chance of reaching 20 on the ACT. Virtually all students with high EXPLORE scores (18 and above) make it to 20 on the ACT. Figure 4 shows this relationship in a rather dramatic way. The curve is flat at either end of the EXPLORE distribution and very steep in the middle. Low scores on EXPLORE correspond with low chances of reaching 20, mid-range scores correspond with mid-range chances of reaching 20, and high scores on EXPLORE correspond with high chances of reaching 20 on ACT.

Now we step back another year and look at the relationship between eighth grade ISAT scores and eleventh grade ACT scores.²¹ All students in Chicago, as well as all others in the state of Illinois, take these two tests. Figure 5 shows the relationship between eighth grade ISAT Math scale scores and ACT composite scores in the eleventh grade. (We chose to show the ISAT Math scores because Math is a slightly stronger predictor of the ACT composite than ISAT Reading scores, but the relationship holds equally well with Reading scores.) Again we see a strong relationship between prior test scores and ACT performance. Note that this graph looks very similar to Figure 4, which shows the relationship between composite ninth grade EXPLORE and ACT scores.

The ISAT is scored on a continuous scale ranging from 200 to 320 for eighth grade. Students who scored

FIGURE 4**Students who score at least a 17 on EXPLORE have a good likelihood of reaching 20 on ACT**

Note: This sample includes 42,456 students who were in eleventh grade in 2005, 2006, and 2007; in tenth grade the year before; and in ninth grade the year before that.

low on their eighth grade ISAT have little chance of reaching 20 on the ACT. As ISAT scores go up, so does the probability of obtaining a score of 20 on the ACT. An ISAT Math score of about 265 results in about a 20 percent chance of reaching a 20 on the ACT three years later. An ISAT score of 280 corresponds to about a 50 percent chance, and an ISAT score around 290 corresponds to about a 75 percent chance.

Most people are unfamiliar with the ISAT scale scores and are used to seeing ISAT results expressed in terms of “performance standards” or “achievement levels.” Using well known standard setting procedures, the Illinois State Board of Education has identified cut points on the ISAT continuous score scale to differentiate one performance level from another.²² The lowest performance level is called “academic warning,” then “below standards,” then “meets standards,” and finally “exceeds standards.” What is called “meets standards” in Illinois is usually called “proficient” elsewhere.

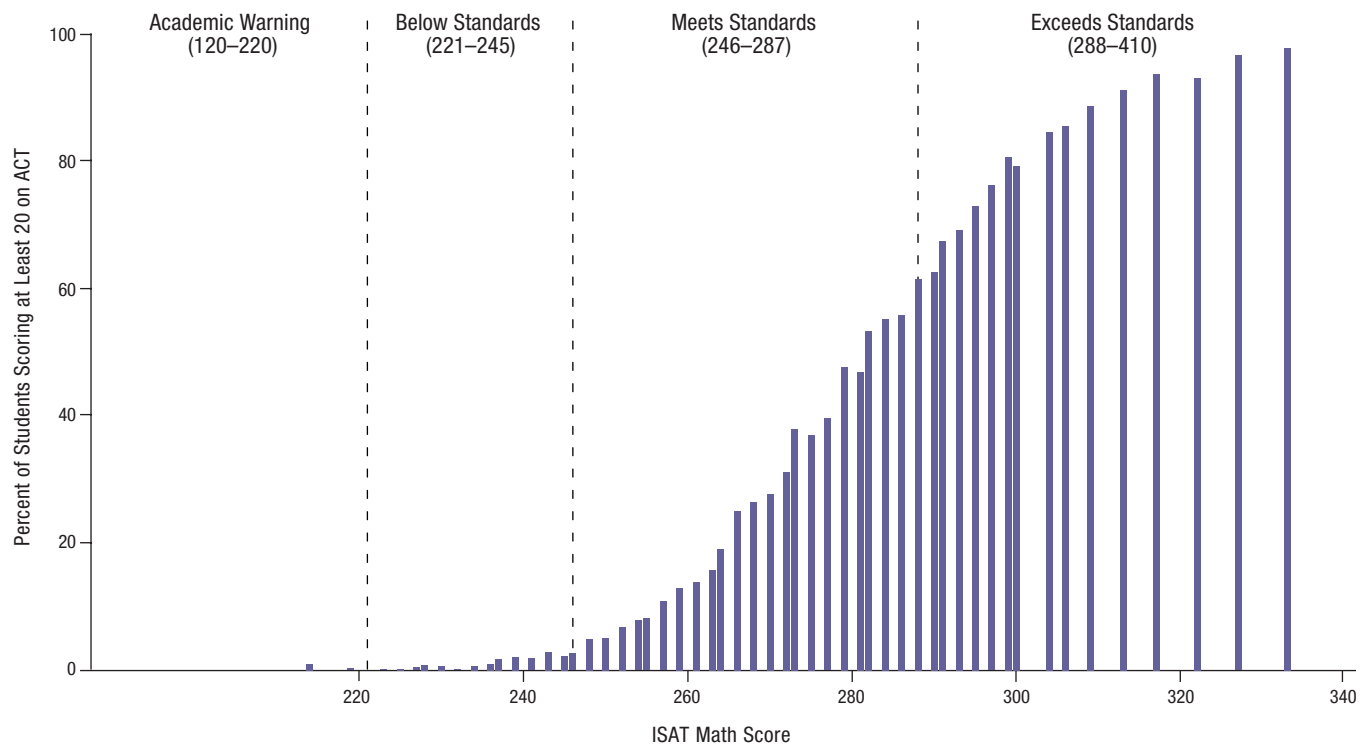
As shown in Figure 5, students who just meet the state standard (set at 246 or higher) have virtually no

chance of getting to 20 on the ACT. A student with a scale score of 250 has about a 5 percent chance of scoring 20 on the ACT three years later. Only with scores of 280 and higher do students have a 50 percent chance or better of scoring 20 on the ACT. For those students who just inch their way into the Exceeds standards category with a score of 288, the probability of reaching 20 is about 62 percent.

To further describe the relationship between eighth grade ISAT scores and the ACT, we calculated the average ACT composite score for students by the performance level on the eighth grade Math ISAT. This is shown in Figure 6. The average ACT score for students in “academic warning” is 12.5; for students “below standards” it is 14.4. As the box plots show, almost no students in either of these categories score 20 on the ACT. The average ACT score for students who “meet standards” is 17.5 (very close to the CPS average), and a very small portion of them reach 20. Only students who exceeds standards have an average ACT score above 20 (it is 23.3), and have most of them reach 20.

FIGURE 5

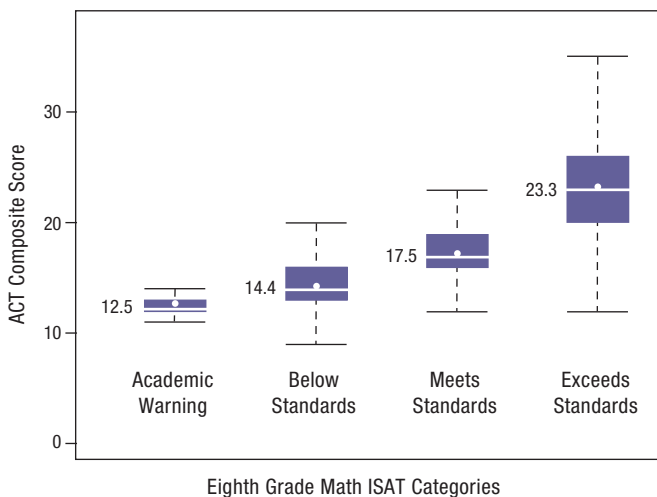
Only students who exceed standards on their eighth grade ISAT math tests have at least a 62 percent chance of scoring 20 on their ACT



Note: This sample includes 40,099 students who took the ACT as eleventh graders in 2005, 2006, and 2007 who also had eighth grade ISAT scores three years earlier.

FIGURE 6

Only a small portion of students who meet standards on eighth grade Math ISAT reach a 20 on the ACT, and one-fourth who exceed standards do not reach even 20



How to Read a Box Plot: Box plots display information about both the distribution and central tendency of the test scores. The median is marked by the white line in the middle of the box. The mean (arithmetic average) is the white dot inside the box. The shaded box includes the scores of the middle 50 percent of students. The top of the box marks off the score for students at the 75th percentile, and the bottom of the box marks the score for students at the 25th percentile. The lines extending up and down from the box show the range for the top and bottom scoring students. The scores of about 99 percent of all students fall between these lines.

High Correlations among Tests

Even though the ISAT standards are misaligned with the ACT results, the tests are still highly correlated. In this sample of CPS students, the eighth grade ISAT Math score is correlated .81 with the eleventh grade composite ACT. The correlation between the composite EXPLORE and the composite PLAN is .88, and the correlation between the composite PLAN and ACT is .89.

Because of these high correlations, we see similar patterns across tests. The eighth grade ISAT predicts scoring 17 on the ninth grade EXPLORE the same way that it predicts scoring 20 on the ACT. This, and the prior evidence showing that an EXPLORE score of 17 is the “tipping point” for a good chance of reaching 20 on the ACT, suggests that 17 can serve as a realistic interim benchmark on the pathway to 20.

Although students may indeed be meeting the performance standards for Illinois, there is a major disconnect between those performance levels in eighth grade and scoring well on the ACT three years later. The eighth grade performance standards look back at the work that students should be able to do according to the state academic learning standards. But the evidence we have here suggests that the eighth grade standards are not well aligned with the work that students will need to be able to do in order to succeed in college. Perhaps we are sending students and schools the wrong message about the adequacy of elementary student academic preparation, especially for the vast majority of students who have their eyes on college in the future. Students, their parents, and their schools are being told that they meet state standards for eighth grade achievement; yet they have virtually no chance of reaching a score of 20 on the ACT, which we note is an admittedly low bar. As described above, this is a

low goal but one that will give many CPS graduates a decent shot at a somewhat selective college or university. Meeting state standards, at least relative to the more rigorous and demanding ACT, is insufficient. It takes a score well into the Exceeds category on the eighth grade ISAT to have a relatively good shot at scoring well on the ACT in eleventh grade.

The technical demands of setting performance standards/achievement levels can be complicated by the political demands. States (and schools) are under pressure to make adequate yearly progress as defined by No Child Left Behind based on performance on the state tests. Lower achievement levels, especially for the “meets standards” level (usually called “proficient”), make it easier to meet adequate yearly progress. Some observers have suggested that Illinois deliberately set elementary school performance standards low, or lowered them in 2006, so that student achievement looks better than it actually is.²³

Chapter 2

How CPS Students Stay on the Pathway to 20

Thus far we have shown how strongly prior test scores predict students' ACT scores. Whether we look at eighth grade ISAT scores or ninth grade EXPLORE scores, we find that students who score poorly have little chance of reaching 20 on the ACT and students who score well have a good chance. Very few students who start out very low on either the ISAT or the EXPLORE will make it to 20 on the ACT. Students with high scores on ISAT and EXPLORE are likely to reach 20. Our ability to accurately predict ACT scores by previous achievement test scores does not mean they are **determined** by these prior scores, however. There are many students who start in the same place but end up different from each other. It is students' school experiences that play such a strong role in determining academic achievement.

In the remainder of this paper we argue that there are two major factors over and above students' prior achievement test scores that determine how well they do on the ACT. These are the quality of the high school, as measured by its academic culture; and the quality of work that students do, as measured by their grades. As we demonstrate below, these two factors have significant influence on the amount of improvement students make over time from one test score to another.

The Impact of Academic Culture and Good Grades on Student Achievement

This report includes examples of groups of students who look very similar to each other in terms of their achievement test scores at one point in time, yet they end up following divergent paths going forward. Looking back to Figure 3 (see page 9),

note the overlap in EXPLORE scores between the students who made it to 20 and those who did not. The lower quarter of students who made it to 20 look very much like the top quarter of students who did not get to 20. Why did one group make it and the other did not? We can also go back to Figure 4 (see page 10) and note the students who scored 17 on PLAN. Why did about half reach 20 while the other half did not? In both of these comparisons, we find the same two primary factors responsible for the higher ACT scores: attending high schools with strong academic cultures and earning high grades in courses.

Three recent Consortium studies have presented compelling evidence about the positive effects of strong academic climates on several important student outcomes. In *What Matters for Staying On-Track and Graduating in Chicago Public High Schools*, the authors

show how the academic culture of high schools affect freshman attendance rates, freshman failure rates, and freshman grade point averages. Although there are some differences in which aspects of the positive academic culture in high schools impact which outcomes, there is also general consistency. For example, indicators of positive student and teacher relationships have strong positive impacts on all three student outcomes (attendance, failures, and grade point average) during the freshman year. More specifically, in schools where there are strong reports from students on **student-teacher trust**, freshmen have 2.30 fewer days absence per semester, 0.78 fewer failures per semester, and their grade point averages are 0.23 points higher than students with similar background characteristics (including prior test scores) who attend similar schools. These analyses very carefully control for other possible

Items from Four Key Survey Measures

1. Student-Teacher Trust measures students' perceptions about the quality of their relationships with teachers. Questions ask students if teachers care about them, keep promises, listen to their ideas, and try to be fair. High levels indicate that there is trust and open communication between students and teachers.

How much do you agree with the following statements about your teachers:

- My teachers really care about me.
- My teachers always keep their promises.
- My teachers always try to be fair.
- I feel safe and comfortable with my teachers at this school.
- When my teachers tell me not to do something, I know they have a good reason.
- My teachers treat me with respect.

Possible Answers: *Strongly Disagree, Disagree, Agree, Strongly Agree*

2. School-Wide Academic Press for the Future measures students' views of school norms of academic expectations. Students report on the degree to which all students are expected to work hard to stay in school, to plan for their futures, and to have high personal aspirations for their lives after graduation. High levels indicate that the school expects all students to work hard, to stay in school, and to plan seriously for their futures.

How much do you agree with the following about your high school:

- Teachers make sure that all students are planning for life after graduation.
- Teachers work hard to make sure that all students are learning.
- High school is seen as preparation for the future.
- All students are encouraged to go to college.
- Teachers pay attention to all students, not just the top students.
- Teachers work hard to make sure that students stay in school.

Possible Answers: *Strongly Disagree, Disagree, Agree, Strongly Agree*

differences between students and schools, so we are pretty confident that we are isolating the positive effects of high levels of student-teacher trust on attendance, failures, and grade point averages. It is not just the case that schools with the top students have the strongest academic cultures. Among schools serving similar students, those with the stronger academic cultures have stronger student outcomes.

In addition to strong personal relationships between students and teachers, we know that there are other important factors that positively influence student achievement, including the extent to which the school climate inculcates **school-wide academic press for the future and importance of high school for the future**. See sidebar for examples of questions. In schools where there is strong school-wide academic press for the future, freshmen have 1.9 fewer days of

absence per semester, 0.47 fewer Fs, and their grade point averages are 0.15 points higher than in similar schools serving similar students but with weak school-wide academic press for the future.

Not only do several aspects of the school climate affect how well students perform during their freshman year but these factors also continue to influence students' experiences and their outcomes throughout high school and beyond. Moving from the freshman year to the senior year, we also have plenty of evidence showing how the school culture affects whether students enroll in four-year colleges after high school graduation. *From High School to the Future: Potholes on the Road to College* provided a detailed description of student efforts to enroll in four-year colleges. Of course multiple factors are involved here, with student qualifications being highest on the list. But even among highly qualified

3. Importance of High School for the Future examines students' evaluations of the importance of high school and what they are learning for their futures. High levels indicate that students recognize that high school is important for their future success in the workplace and for their life after graduation.

How much do you agree with the following:

- My classes give me useful preparation for what I plan to do in life.
- High school teaches me valuable skills.
- Working hard in high school matters for success in the work force.
- What we learn in class is necessary for success in the future.

Possible Answers: *Strongly Disagree, Disagree, Agree, Strongly Agree*

4. Expectations for Postsecondary Education measures the extent to which teachers report that they feel responsible for encouraging and preparing students for postsecondary education. Do they expect most students to go to college and focus on getting students ready for college? High levels indicate that the teachers in the school have high expectations of students' postsecondary education.

Please mark the extent to which you disagree or agree with the following:

- Teachers expect most students in this school to go to college.
- Teachers at this school help students plan for college outside of class time.
- The curriculum at this school is focused on helping students get ready for college.
- Most of the students in this school are planning to go to college.
- Teachers in this school feel it is part of their job to prepare students to succeed in college.

Possible Answers: *Strongly Disagree, Disagree, Agree, Strongly Agree*

students in CPS, many do not make it to college; and many who do end up in lower quality institutions where they have little chance to obtain a degree.

One of the strongest factors influencing college going is the degree to which the high school has a strong college going culture. We measure this concept on a scale called **expectations for postsecondary education** by asking teachers a series of questions about whether they expect students to go to college, whether they help students and feel it is part of their job, and whether the high school curriculum is focused on college going. See sidebar on page 15 for all survey questions. Holding other factors constant, students with similar qualifications were 12 percentage points more likely to plan to attend a four year college if they attended a high school with a strong college going culture than if they attended a high school with a weak college going culture. The difference was even greater for Latino students (15 percentage points) who are overall less likely to plan to attend a four year college. The positive influence of having a strong college going culture in high school extends to the actual choices that students make about where to attend college. As noted earlier, many well prepared students end up attending weak institutions, where they flounder. Again, holding qualifications constant, students who attend a high school with a strong college going climate are 17 percentage points more likely to attend a college that better matches their qualifications than students in high schools with lower college going culture.

Across multiple studies and data sources we continue to find a great deal of variation in the amount of “value added” that schools contribute to students with similar backgrounds. As a general rule, schools that add the most positive values to their students’ outcome measures are schools with a strong academic climate and culture. This report only addresses selected aspects of a positive high school academic culture—student-teacher trust, school-wide academic press for the future, importance of high school for the future, and expectations for postsecondary education—and these only in relationship to certain outcomes, with some at the beginning of the high school experience (freshman year success) and others at the end of high school (four year college going).

The Impact of Academic Culture and Good Grades on ACT Scores

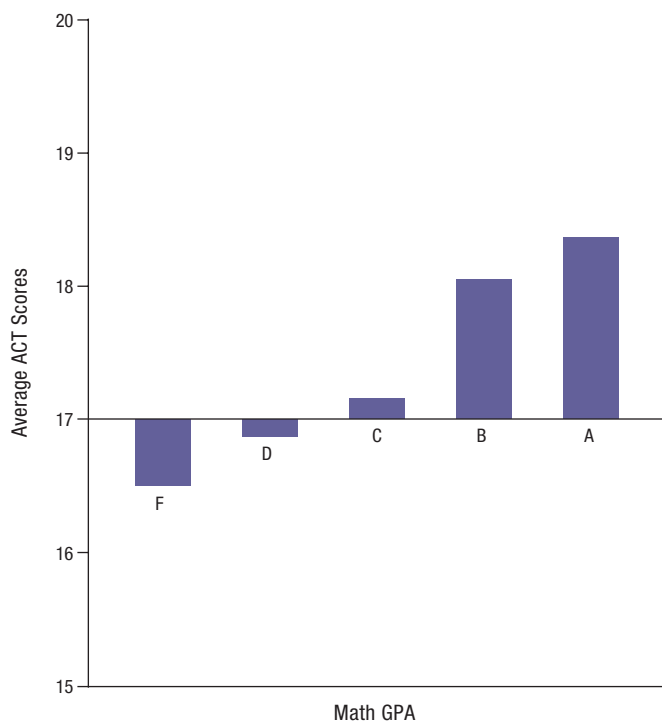
Academic culture in high school also has a positive impact on ACT scores. As shown in the ACT preparation study, schools where students report a strong culture of school-wide academic press for the future (see sidebar on pages 14-15) and teachers report a strong college going culture, ACT test scores are significantly higher, after controlling for student and school factors, including students’ prior eleventh grade PLAN scores. On both the ACT Reading and Science tests, the difference in scores between schools strong on the two academic climate measures, compared to schools that are weak, is approximately 0.6 points of the ACT scale. At first thought, this may not seem like much of a difference, but note that the analysis controlled for the eleventh grade PLAN scores. On average, students’ scores improve less than one point between these two tests. This indicates that students who started eleventh grade with similar PLAN scores but attended high schools that were either strong or weak on these two important measures of academic climate ended up the junior year with ACT scores that differed by more than one-half of a point on a narrow scale where each point matters a great deal. There are similar differences on the Math and English subtests of the ACT.

On its own, a strong academic climate spurs students on. Relationships between teachers and students are stronger, there is greater academic press on students, students learn that doing well in high school **does** matter for the future, and their teachers encourage and support their interest in going to college and help them get there. But these probably do not directly result in students in schools with stronger academic climate doing better on many academic outcomes, including ACT scores. It is more likely that these conditions facilitate greater student learning—students are more willing and perhaps able to invest in themselves with greater effort. Similarly, it is also likely that the stronger academic climate in schools is related to stronger instruction, where teachers make greater efforts and have higher aspirations for their students. And there is probably a greater payoff for both students and teachers in these schools with stronger academic climates as they

see the benefits and “return on investments” in the form of better achievement, including higher test scores.

The ACT preparation study also showed the powerful effect that getting good grades has on ACT scores. The researchers examined test score growth from the fall of eleventh grade (using PLAN scores) to spring eleventh grade ACT scores in all four subject areas. They found that, regardless of initial PLAN scores, students made significantly greater improvements on ACT as their grades went up. First we will see what happens with students who scored 17 on their eleventh grade Reading PLAN score. This is only marginally higher than the CPS average. Students who got As in eleventh grade English averaged 18.5 on the ACT; students who got Bs averaged 18.0; C grades resulted in ACT scores of 17.2; and students with Ds or Fs in English actually received ACT scores lower than their earlier PLAN scores.²⁴ These analyses controlled for other factors, so we are confident that the good grades reflect student learning in the subject matter that then also becomes apparent on the ACT performance. Figure 7, which is adapted from the ACT report,

FIGURE 7
Students who started with an eleventh grade PLAN score of 17 did better on ACT Math when they earned higher grades



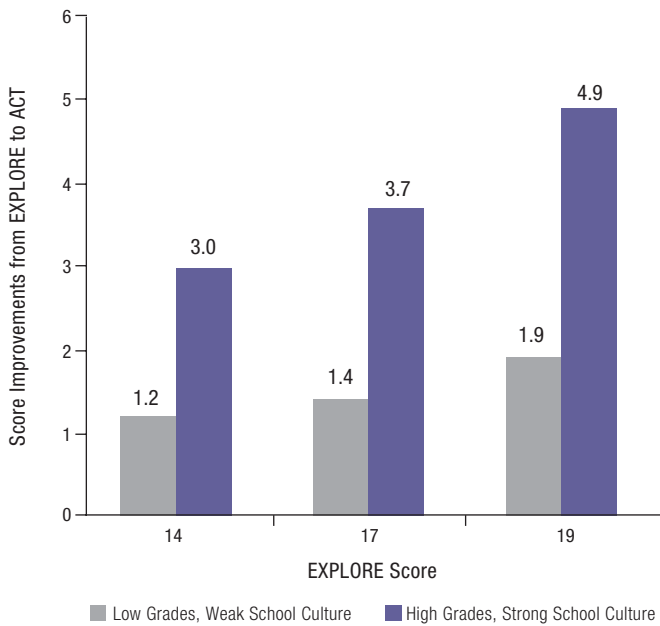
shows the powerful effect of getting good grades on Math ACT test scores. Although this is not shown, this relationship holds for the other three subjects on the ACT. The finding is robust no matter what the starting PLAN score is. Students who are relatively weak on their PLAN scores but do well in class make big gains on the ACT. So do students who are strong on PLAN. No matter where they start on PLAN, students who do poorly in class actually lose ground on the ACT. Their scores slip backwards. These findings tell us that students need to be learning, growing, and developing in their classes and when they do they get a pay-off in terms of grades and test scores, both of which matter in their futures.

Returning to the “pathway to 20,” we bring together these two important factors—strong academic culture and good grades to show their combined effects. We start with the ninth grade EXPLORE and return to discussing the ACT composite scores rather than the separate subject scores. We are looking at students with three different EXPLORE starting scores—first a 14, then a 17, and then a 19. Fourteen is one point below the CPS average, but still very typical for CPS. Seventeen is the score that we referred to earlier as the “tipping point,” where students start to have a very high likelihood of making it to an ACT score of 20. And finally, 19 is a strong EXPLORE score and students who score this high should make strong progress, ending with ACT scores that will make them eligible for competitive colleges where they should succeed.

We will start with our students who are at the “tipping point” on EXPLORE with a composite score of 17. There ends up being a big difference in ACT scores among these students depending on the strength of the academic culture in their high school and how good their grades were. Students who attended high schools with a strong academic culture (defined for this analysis as being above average on school-wide academic press for the future and in the top quarter of schools on expectations for postsecondary education) and earned a grade point average of 3.0 or better during freshman, sophomore, and junior year advanced 3.7 points on the EPAS scale to receive an average ACT score of 20.7, past our goal of 20. See Figure 8. On the other hand, less fortunate students who also started out with a 17

FIGURE 8

Students who earn high grades and attend strong schools see the biggest EXPLORE to ACT improvements from freshman to junior year



on EXPLORE but who went to weaker high schools and earned less than a B average only scored an average of 18.4 on the ACT. The students with the stronger academic climate and better grades gained more than twice as much on the EPAS system as their peers in the weaker schools and with the lower grades. The first group gained 3.7 points and the second group only 1.4.

Now we turn to students who started high school with a 14 EXPLORE, which is low both in terms of

national averages and CPS averages. Among these students, those who attended high schools with a strong academic culture and earned a grade point average of B or better in the freshmen, sophomore, and junior years advanced a full 3.0 points on the EPAS scale to reach 17 on the ACT. This doesn't make it to 20, but it is much closer than the scores of students who attended schools with weak academic culture and earned less than a 3.0 grade point average. These students gained only 1.2 points and ended up with an average ACT score of 15.2. The students who experienced stronger schools and earned better grades again gained more than twice as many points on EPAS than their peers in weaker schools and with lower grades.

Finally, we look at students who scored 19 on EXPLORE in the fall of ninth grade. For CPS, this is a very strong EXPLORE score. Students who experienced a strong academic culture and earned good grades advanced nearly five full points on the ACT to an average scores of 23.9, whereas the less fortunate students improved by only 1.9 points to an average ACT score of 20.9.

So we see that regardless of the EXPLORE starting score, students who experience the stronger academic culture and earn better grades do much better on the ACTs than their less fortunate peers. In fact, under the better conditions, students improve by a factor of 2.5 times as much as students do under worse conditions. More students get higher ACT scores when they attend strong high schools as we have defined them and earn good grades.

Chapter 3

Interpretive Summary

Given the overall paucity of high ACT scores, CPS has set a goal of increasing the number of students who score 20 or better on their ACT. Even though we noted that this goal is somewhat lower than the ACT subject area benchmark scores, the more students who reach this goal, the more likely it is that they will be accepted into a four year college and be better prepared for college coursework. Though other studies have suggested that preparation alone doesn't guarantee college access for many students, it surely is an important and necessary first step.

The analyses and the data here show that ACT scores are influenced by multiple factors—prior achievement as measured by test scores, the academic culture of high school, and the quality of student work in high school as measured by grades. These three factors are certainly interrelated. For example, it is easier to create a strong academic culture in a high school where students are better prepared; better prepared students have an easier time rising to the challenge to engage in academically demanding work and thereby earning top grades; and academic cultures are easier to build and sustain when teachers and students see results in terms of better grades and test scores.

Yet we have strong evidence showing that schools and their academic cultures and the work that students do inside those schools pay off whether students look strong or weak in terms of their preparation. Even students with low test scores (on EXPLORE or PLAN) show substantial learning in stronger schools when they do better in their class work. Prior test scores are highly predictive of ACT scores, but students only improve on EPAS when they do the academic work necessary to get good grades. Students who start

out strong on tests and do poorly in their classes actually fall back on ACT performance. Yes, prior scores matter, but more important is how those abilities are engaged in school and coursework.

Aiming to increase the number of students who score 20 really focuses attention on a key outcome. But it also suffers the same problem as any criterion based on a single cut score—whether it is “the national norm,” or “state standards.” In order to move this indicator, there is a tendency to target extra resources on the students who have the best chance of moving over the cut score. These are often called the “bubble kids.” In this case, that would be students who scored 17 on ninth grade EXPLORE. Of course we want more of these students to make it to 20, but not at the expense of other students whose EPAS gains are then imperiled. CPS needs more students making greater gains from EXPLORE to PLAN to ACT, whether they are within range or are reaching 20 or above or below. How then do we create incentives to move more students to higher ACT scores without more gaming of the system or without encouraging counterproductive test preparation activities?

One way to do this would be to reward growth on the EPAS and to set reasonable growth goals, student-by-student. Yes, we want more students who score 17 on EXPLORE to reach 20 on ACT, but at the same time we want more students who start with an EXPLORE score of 14 to reach 17, instead of 15. It is also just as important to have more of the strongest students—those with EXPLORE scores of 18, 19, and 20—move even higher. Perhaps, instead of using the “expected growth” metric as a standard for improvements on EPAS, we should be expecting more students to perform like their peers who experience a strong academic culture and get high grades. As reported here, we have the empirical evidence to show that this is possible in CPS. Such a goal setting system would challenge each student at his or her level and constantly ratchet up expectations, not by expecting everyone to reach a uniform and specific criterion but by having individualized goals that expect growth equal to the amount of growth that similar students achieve under the best conditions.

More students can achieve like those under the best conditions—schools with strong academic cultures and the kind of instruction that students respond to with greater effort and engagement that will result in more learning, hence better grades and better test scores. The analyses described here suggest that strong academic cultures and high quality course instruction and student performance go hand-in-hand. This further suggests that efforts to improve either culture or instruction should consider the close and probably reciprocal relationship between them.

It seems necessary to reflect back on Figure 5 (see page 11) that showed the relationship between eighth grade ISAT Math scores and the likelihood of reaching 20 or better on the ACT three years later. That graph shows the cut scores that the Illinois State Board of Education “adjusted” in 2006 to determine what defines “meeting state standards.” This cut score is so low that students who score just above it have only a slight chance of making the ACT 20 when they are juniors. The strongest academic cultures and the best grades aren’t going to be sufficient for these students who simply do not have the academic preparation to engage in the rigorous instruction they need to be prepared for college. Having such low academic standards in eighth grade serves no one well, least of all the students who eke through and then are surprised to find themselves unprepared to do well in high school, let alone college.

Simply raising standards for students in CPS or state-wide is not a solution, either. Even now we see very strong students—well into the Exceeds category—who do not reach even 20 on the ACT. This is a less an indictment of the standards than an indication that there are strong students who are being ill served by their high schools. Why else are even 15 or 20 percent of the highest scoring students not reaching a low bar on the ACT? We should have high expectations for our schools as well as for students.

Our expectations for strong performance by all students need to start early in the elementary grades, if not in preschool. We should continue to use our technical capacities to develop information systems that identify students who need an academic nudge

throughout the grade levels. This is not for predicting who will fail but for pointing out students who can succeed, just like many of their peers, if they receive the help that good schools and good teachers can provide.

Finally, we need to acknowledge that there are no simple answers about how best to create a strong academic climate under difficult conditions where failure has been the historic norm. This is the quandary facing

CPS and its partners in the “Turnaround” schools²⁵ and in other efforts to make drastic improvements in chronically struggling schools. We do not have answers, but we do know that there are many schools serving similar student populations where the outcomes are strong. It is our task as researchers and practitioners to learn more about the actual mechanisms involved in creating stronger climates where teachers and students work in partnership to achieve success.

References

ACT, Inc. (2005)

Issues in College Readiness: What Are ACT's College Readiness Benchmarks? Iowa City, IA: ACT. Available online at www.act.org/research/policymakers/pdf/benchmarks.pdf.

ACT, Inc. (2006)

Reading Between the Lines: What the ACT Reveals about College Readiness in Reading. Iowa City, IA: ACT.

ACT, Inc. (2007a)

ACT Technical Manual. Iowa City, IA: ACT. Available online at www.act.org/aap/pdf/ACT_Technical_Manual.pdf

ACT, Inc. (2007b)

EXPLORE Technical Manual. Iowa City, IA: ACT. Available online at www.act.org/plan/pdf/PlanTechnicalManual.pdf.

ACT, Inc. (2007c)

PLAN Technical Manual. Iowa City, IA: ACT. Available online at www.act.org/plan/pdf/PlanTechnicalManual.pdf.

ACT, Inc. (2008)

EPAS® Educational Planning and Assessment System. Iowa City, IA: ACT. Available online at www.act.org/epas/.

Allensworth, Elaine, Macarena Correa, and Stephen Ponisciak (2008)

From High School to the Future: ACT Preparation—Too Much, Too Late. Chicago: Consortium on Chicago School Research at the University of Chicago.

Banchemo, Stephanie, Darnell Little, and Diane Rado (2007)

“Why test scores went up.” *Chicago Tribune*, March 6. Section 1, page 1.

Chicago Public Schools (2007)

CPS Average ACT Scores. Chicago: Chicago Public Schools. Available online at research.cps.k12.il.us/export/sites/default/accountweb/Reports/Citywide/act_average_cps_yraccross.xls.

Chicago Public Schools (2008)

High School Directory. Chicago: Chicago Public Schools. Available online at www.cps.k12.il.us/Schools/hsdirectory/HS_Directory.pdf.

Koretz, Daniel (2008)

Measuring Up: What Educational Testing Really Tells Us. Cambridge, MA: Harvard University Press.

Roderick, Melissa, Jenny Nagaoka, and Elaine M. Allensworth (2006)

From High School to the Future: A First Look at Chicago Public School Graduates' College Enrollment, College Preparation, and Graduation from Four-year Colleges. Chicago: Consortium on Chicago School Research at the University of Chicago.

Roderick, Melissa, Jenny Nagaoka, Vanessa Coca, and Eliza Moeller (2008)

From High School to the Future: Potholes on the Road to College. Chicago: Consortium on Chicago School Research at the University of Chicago.

The Education Trust (2005)

College Results Online. Available online at www.collegeresults.org/default.htm.

Endnotes

Chapter 1 Endnotes

- 1 Roderick, Nagaoka, and Allensworth (2006)
- 2 Roderick, Nagaoka, Coca, and Moeller (2008)
- 3 Allensworth, Correa, and Ponisciak (2008)
- 4 Chicago Public Schools (2008)
- 5 It is somewhat unfair to compare CPS or Illinois scores to the national average given that all students in Illinois (and Chicago) take the ACT, whereas the national sample is more selective. That is, for the most part students in other parts of the country take the ACT voluntarily and academically stronger students are more likely to select in.
- 6 ACT, Inc. (2006)
- 7 ACT, Inc. (2005); see www.act.org/research/policymakers/pdf/benchmarks.pdf for a brief description of the benchmarks. For more detail, see the *ACT Technical Manual*.
- 8 The Education Trust (2005)
- 9 A higher percentage of CPS **graduates** score 20 or better on the ACT. Among the graduates of 2006, 30 percent scored 20 or better. This discrepancy occurs because more lower scoring students drop out after taking the ACT in the spring of junior year. A corollary disturbing fact is that even some higher scoring juniors do not complete high school. We estimate that between 91 and 93 percent of students scoring 20 or better will graduate, leaving 7 to 9 percent of these capable students without high school diplomas.
- 10 Lane Tech, Whitney Young, Lincoln Park, Northside College Prep, and Payton College Prep.
- 11 Chicago Public Schools (2007)
- 12 ACT, Inc. (2008); for more information about EPAS, see www.act.org/epas/.
- 13 CPS also administers EXPLORE to all eighth graders. Previously eleventh grade students also took the PLAN each fall. This practice is being discontinued in the fall of 2008.
- 14 See page 22 of the *EXPLORE Technical Manual* for a discussion of what ACT means by being “approximately on the same scale.”
- 15 See page 33 of *From High School to the Future: ACT Preparation—Too Much, Too Late*.

- 16 See Table 4.16 on page 34 in the *EXPLORE Technical Manual*.
- 17 ACT, Inc. (2007c); see Table 4.9 on page 31.
- 18 The very low scoring students have such high expected gains because their initial scores are below chance and may result from not completing the test. These students are likely to do much better on the next test.
- 19 The expected gain for an EXPLORE score of 15 is 1.0. Our average expected gain of 1.3 is higher because both the lower scoring and the higher scoring students have expected gains that exceed 1.0.
- 20 We observe the same pattern when we break down the EPAS scores more finely. We tracked back the average PLAN and EXPLORE scores for all students with ACT scores between 11 and 30. There is little variability in EXPLORE to PLAN gains across the range of ACT scores. There is great variability from PLAN to ACT, with students who end up with low ACT scores making little or no gains and the higher scoring students making greater gains.
- 21 Our sample is reduced again, now down to 40,099. These are our 2005, 2006, and 2007 eleventh graders with ACT scores who also had eighth grade ISAT scores three years earlier.
- 22 See Koretz (2008) for a good description of common standard setting processes.
- 23 Banchemo, Little, and Rado (2007)

Chapter 2 Endnotes

- 24 We get a lot of questions and comments about the subjectivity of grades and grade inflation. There is no doubt that these factors influence grades to some extent. On average across the entire system, however, grades and test scores are highly correlated. At the school level, there is a strong correlation between average grade point average and average ACT scores. In lower performing schools, relatively few students earn high grades.

Chapter 3 Endnotes

- 25 The “Turnaround” schools effort is attempting to improve student performance by replacing a school’s leader and staff.

About the Authors

John Q. Easton

John Q. Easton is Executive Director of the Consortium on Chicago School Research (CCSR). He has been affiliated with CCSR since its inception in 1990 and led its first research study. Much of Easton's research at CCSR examines trends in achievement test scores and the use of test scores in school improvement and school accountability efforts. He is coauthor of a recent study on the relationship between freshman-year academic performance and high school graduation. Easton holds a PhD in Measurement, Evaluation, and Statistical Analysis from the University of Chicago.

Stephen Ponisciak

Stephen Ponisciak is an Associate Researcher at the Wisconsin Center for Education Research (WCER). He works in the Value Added Research Center at WCER and in the Department of Applied Research at Chicago Public Schools (CPS). At CCSR, Ponisciak was a senior research analyst. He analyzed the PSAE, ACT, EXPLORE, and PLAN tests; studied teacher mobility in CPS; and worked on value-added models for school performance. Ponisciak earned a BS in mathematics from the University of Notre Dame; he earned his PhD from the Institute of Statistics and Decision Sciences at Duke University, where his dissertation was focused on Bayesian analysis of teacher effectiveness.

Stuart Luppescu

Stuart Luppescu is Chief Psychometrician at CCSR. He specializes in educational measurement. He received his PhD in educational measurement from the University of Chicago. Before coming to Chicago, Luppescu taught English in Japan and Hawaii for 13 years. His research interests are in language acquisition and in multilevel modeling of achievement data.

This report reflects the interpretation of the authors. Although the Consortium's Steering Committee provided technical advice and reviewed earlier versions, no formal endorsement by these individuals, organizations, or the full Consortium should be assumed.

This report was produced by the Consortium's publications and communications staff.

Editing and project management by Publications & Creative Services

Graphic design by Jeff Hall Design

Photos by David Schalliol

Consortium on Chicago School Research

Directors

John Q. Easton
Executive Director
Consortium on Chicago
School Research

Elaine Allensworth
Consortium on Chicago
School Research

Melissa Roderick
University of Chicago

Penny Bender Sebring
Consortium on Chicago
School Research

Steering Committee

Josie Yanguas, *Co-Chair*
Illinois Resource Center

Steve Zelman, *Co-Chair*
Illinois Network of Charter
Schools

Institutional Members

Clarice Berry
Chicago Principals and
Administrators Association

Barbara Eason-Watkins
Ginger Reynolds

Steve Washington
Chicago Public Schools

Marilyn Stewart
Chicago Teachers Union

Individual Members

Veronica Anderson
Catalyst Chicago

Gina Burkhardt
Learning Point Associates

Carolyn Epps
Chicago Public Schools–AIO

Cornelia Grumman
Ounce of Prevention

Timothy Knowles
Urban Education Institute

Janet Knupp
Chicago Public
Education Fund

Dennis Lacewell
Urban Prep Charter Academy
for Young Men

Mark Larson
National Louis University

Peter Martinez
University of Illinois
at Chicago

Ruanda Garth McCullough
Loyola University

Gregory Michie
Illinois State University

Stephen Raudenbush
University of Chicago

Brian Spittle
DePaul University

Matthew Stagner
University of Chicago

Kim Zalent
Business and Professional
People for the Public Interest

Martha Zurita
Latino Youth Alternative
High School

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.



CONSORTIUM ON
CHICAGO SCHOOL RESEARCH
AT THE UNIVERSITY OF CHICAGO
URBAN EDUCATION INSTITUTE

ccsr.uchicago.edu

1313 East 60th Street

Chicago, Illinois 60637

T 773-702-3364

F 773-702-2010

