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Identifying Appropriate College-Readiness Standards For All Students

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There is a growing awareness among educators and policymakers that the academic standards associated with college readiness are also necessary to prepare students to take advantage of opportunities in the workplace.[2] A challenging K-12 college-readiness curriculum is also important for preparing students for citizenship.[3] Such a curriculum, if universally taught and learned, would help to equalize opportunities across socioeconomic backgrounds so that no group of citizens is denied the benefits of a strong education.[4]

The goal of preparing all students for the opportunities of postsecondary education, work, and citizenship dictates that school systems do three things. First, they must adopt high but attainable college-readiness standards that minimize the odds that students will need remediation should they attend college. Second, they must make a K-12 curriculum based on those standards the default curriculum for all students regardless of socioeconomic background.[5] Third, to have a chance at success, they must get students on track to reach those standards in elementary school, as getting academically behind students up to high academic standards later is difficult and costly.

Current Focus on Standards Below College Readiness

Historically, school systems have provided an academically strong education for a minority of students, mostly from advantaged backgrounds.[6] That all students can and should be educated to high standards is a relatively recent idea.[7] Educators' enthusiasm for this idea is sharply constrained by their sense of the possible. School systems that serve large populations of disadvantaged students are burdened with large numbers of ill-prepared and poorly motivated students in middle and high school – in large part a legacy of past failures to get those students on track to college readiness in elementary school.

Faced with this reality, policymakers and educators are reluctant to set academic goals and standards that, over the short run, many of their students will clearly fail to attain. Thus, the consequence of past failures to get students on track to college readiness is a lowering of sights

[1] The authors would like to acknowledge the invaluable assistance of Janey Chaplin in the preparation of this paper.

[2] See Achieve, Inc. (2004a). Responding to this reality, the majority of students end up acquiring some postsecondary education or training. Around 57% of 25 to 29-year-olds had done so in 2003. See also National Center for Education Statistics (2005) http://nces.ed.gov/programs/coe/2005/section3/table.asp?tableID=274.

[3] For example, in a New York school finance case, the Campaign for Fiscal Equity (2003) summarized the trial court's opinion as saying that citizens should "have skills that would permit them to understand the kind of complex issues that they might be asked to evaluate as voters or jurors, such as tax policy, global warming, or DNA evidence." www.cfequity.org/Appelatesum.html.

[4] Because of the connection between a strong education and lifelong opportunities, college readiness standards may be couched as "opportunity readiness standards" for students who have no immediate desire to attend college.

[5] This means that the college readiness curriculum becomes the standard school system curriculum, to be opted out of only in special circumstances (e.g., the student is severely learning disabled or the family explicitly chooses to opt out).

[6] "Advantaged" in this context means not just socioeconomically advantaged, but from family cultures that strongly stress achievement in school.

[7] In the 1930s University of Chicago president Robert M. Hutchins argued that "The best education for the best is the best education for all," but his was a minority voice in that era.

that reduces the odds that future generations of students will be set on the college-readiness path.

Current state accountability systems have unwittingly reinforced the focus on relatively low standards. These systems are focused on getting all students up to minimum state standards over the short term, with little reward or recognition for schools moving students to higher levels. The fact that minimum state accountability standards are tied to sanctions, and that most states do not want to sanction the majority of their schools, has been a powerful incentive to keep those standards relatively low.[8] To avoid tagging most of the schools, the standards are generally set at a level that can be reached relatively quickly by most students in the great majority of schools at the current rate of school improvement.[9]

The concept that goals and standards that are unattainable over the short run may be feasible over the longer run is an argument for states to slowly but steadily ratchet up their standards. The ratcheting should take place earlier and more aggressively in elementary school, as that is where students must be placed on track to college readiness. As better prepared elementary school students flow through the system, middle and high school standards should be raised correspondingly.

"College Readiness for All" Requires Taking the Longer View

The setting of ambitious standards for all students, including disadvantaged students, requires educators, policymakers, and communities to focus on early intervention if they take those standards seriously. Using the metaphor of a long ramp to college readiness that begins in early childhood, many advantaged students start out on this ramp from the beginning. Most disadvantaged students start out on a much flatter ramp in early childhood and the elementary grades, then must climb sharply in middle and high school to get onto the college-readiness ramp. The later the start and the farther students are below the level of the college-readiness ramp at their grade level, the greater is the steepness of the "on-ramp" that transitions them onto the college-readiness ramp. By high school, the steepness of the required on-ramps is such that few academically behind students climb them.[10]

An early start makes it possible to reach high standards in one subject while maintaining sufficient student learning time and a balanced curriculum in other subjects. A late start, by contrast, makes it likely that reaching high standards in one subject will require cannibalizing learning time in other subjects. Jaime Escalante's notable success in getting low-income students to pass the

[8] Most state standards appear to be roughly comparable to the NAEP Basic Standard, not the higher NAEP Proficient standard that indicates "solid academic performance" and "demonstrated competency over challenging subject matter." See Achieve, Inc. (2005) www.achieve.org/achieve.nsf/QuickFacts?OpenForm.

[9] For example, to meet the requirements of the No Child Left Behind Act, nearly all students must meet state proficiency standards by the 2013-14 school year. This has admirably created a sense of urgency and led to the expansion of desirable activities such as after-school tutoring of academically behind students. At the same time, the Act as written has tended to focus each state on a single relatively low academic standard.

[10] The KIPP (Knowledge is Power Program) Academies are an example of an "on-ramp" program designed to get academically behind middle school students onto the college readiness ramp through intensive hard work. High-school reformers should take note that KIPP's designers did not choose to start with students in ninth grade. Though KIPP originally started in grade 6, the program has added fifth grade in order to gain the advantage of starting earlier. The example of KIPP indicates that when intervention starts as late as fifth grade, a high-intensity program is necessary to get academically behind students onto the college track. See www.kippschools.org

Advanced Placement calculus exam, for example, was accomplished by starting to prepare students in grade 10. Escalante lacked the cooperation of the school system outside his high school to begin preparing the students earlier[11]. As a result, the extensive time his students had to invest in reaching the level of AP calculus likely resulted in lost learning time in other subjects.

How Setting a Goal that All Students Reach College Readiness Can Promote Excellence and Equity

School systems do not need to wait for states to raise standards. Setting ambitious college-readiness standards and goals can be a powerful strategy for steering a school system towards excellence. The higher the standards that are targeted, the clearer it becomes that the only way to take the students to those standards is early intervention and a long-term focus on improving the fundamentals of teaching and learning. Setting lower standards and targeting short-term incremental test score gains, on the other hand, often tempts educators into shortsighted "quick-fix" practices, such as narrowing instruction to focus on questions that resemble test items; narrowing the student population served to focus mainly on "bubble students" close to the passing standard; and narrowing the curriculum by omitting skills and subjects that are not on this year's test but that are valuable to students over the long run.

A long-term focus on college-readiness standards for all students, including disadvantaged students, can also promote equity and the closing of achievement gaps. Advantaged students in affluent areas are already focused on and in many cases are exceeding these standards.[12] School systems that target much lower standards for disadvantaged students have in effect given up in advance on closing achievement gaps.

Educators' and community leaders' fear of failure when contemplating setting ambitious academic goals must be combated by the idea that "failing" to reach a higher standard is not failure, if the standard reached is higher than what would have been attained had the target been set lower.

The Value of Locally Adopted Standards

When state standards are set too low, communities and school systems can turn to locally adopted standards.[13] One advantage of these standards is that they are less subject to the relentless downward pressure that exists for official standards.[14] Communities, school systems, and policymakers who are afraid of high locally adopted standards can simply avoid them rather than lobbying to lower them. These standards can be tied not to sanctions but to professional recognition for educators, so that the school systems that embrace them are motivated more by

[11] See Mathews (1988)

[12] For example, the percent of students passing at least one Advanced Placement exam approaches 50% of the entire student body in certain advantaged Texas high schools. This accomplishment shows the great width of the achievement gap that our nation seeks to narrow for disadvantaged students.

[13] In this paper, we will use the terms "locally adopted standards" or "benchmarks" interchangeably to refer to achievement targets for students that have not been officially set by state government. For example, a school district might adopt a goal that 90% of students pass at least one Advanced Placement exam with a score of 3 or above. In this situation, "passing at least one AP exam with a score of 3 or above" is a locally adopted standard or benchmark.

[14] While official standards are often set with an eye to the lower performing half of schools and districts, locally adopted standards can be based on the aspirations of those school systems with the greatest record of success with disadvantaged students.

the positive goal of achieving excellence than the negative goal of staying out of trouble. Educators who embrace higher standards are likely to be role models for others, and can be promoted as such when their school systems succeed.

Criteria for Setting Locally Adopted College-Readiness Standards on State Tests[15]

The setting of locally adopted college-readiness standards on state tests should be informed by longitudinal data showing the relationship between those standards and other educational indicators related to college success. These indicators can include scores on college-readiness tests such as SAT and ACT and students' need for remediation in college. Ideally, standards should be set high enough that students who meet them have a low probability, say 10% or less, of needing remediation in college. The goal is to ensure that students exceed minimum readiness levels with a comfortable margin of error. This is analogous to planning to arrive at a meeting early in order to ensure that one is on time.[16] At the same time, standards so high that no one can get significant percentages of their students to reach them are not useful, at least over the short run.[17]

A Case Study: Setting College Readiness Benchmarks for the Just for the Kids School Reports in Texas

When the National Center for Educational Accountability (NCEA)'s predecessor organization, Just for the Kids (JFTK) began developing school reports in Texas in 1997,[18] schools were widely focused on getting students to meet the state passing standard on the Texas Assessment of Academic Skills (TAAS). Just for the Kids strongly suspected and was later able to show with longitudinal analysis that the TAAS passing standard was too low to indicate that students were well prepared for high school courses or for college.[19] Since the state lacked a higher standard tied to the Texas Learning Index (TLI), the scale used for the state reading and mathematics

[15] See Dougherty, Mellor, and Jian (2006) for a discussion of problems with the alternative approach of setting standards based on course credits earned. In general, a variety of college readiness indictors should be used, and the quality of the information provided by each indictor should be carefully monitored.

[16] This example illustrates the distinction between standards suitable for institutional goal-setting and those appropriate for accountability, especially when individuals and institutions are subject to sanctions for failing to meet the standard. A company with a policy that employees plan to show up ten minutes early may be reluctant to punish employees for being five minutes early. Thus, "ten minutes early" might be a suitable company guideline but not an accountability standard.

[17] State tests must also contain a sufficient number of items to indicate whether a student is college-ready. For example, a "high school" test consisting mainly of items at the seventh and eighth grade levels may provide little information on college readiness. See Achieve, Inc. (2004b).

[18] The Just for the Kids School Reports were designed to compare each school's performance in each grade and subject with that of the highest performing schools serving equally or more disadvantaged student populations, in order to raise educators' expectations about what is possible. The reports have sought to avoid identifying as higher performing role models schools that place excessive emphasis on minimum levels of performance, but rather to highlight schools that are more successful at getting students on track to higher standards.

[19] The exit-level TAAS test in tenth grade did not cover high school material, so JFTK/NCEA focused on eighth grade TAAS results. One analysis showed that a student just meeting the state's passing standard in eighth grade mathematics, and who took Algebra 1 in ninth grade, had only a 10% probability of passing the state end-of-course Algebra exam. A second analysis showed that most students meeting the state passing standard but below the higher proficiency standard identified by Just for the Kids needed remediation when they enrolled in Texas public higher education institutions.

tests, Just for the Kids popularized its own TAAS proficiency benchmark and was able to get that standard widely used by educators.[20]

In 2003 Texas replaced the TAAS with the more rigorous Texas Assessment of Knowledge and Skills (TAKS). In the summer of 2004 the Texas Higher Education Coordinating Board released information, shown in Table 1, on the relationship between TAKS scores and student performance on other college readiness measures such as the SAT, ACT, and the Texas Higher Education Assessment (THEA) exam used to identify whether students entering Texas public colleges and universities are ready for college coursework.[21]

The information in Table 1 can be used to identify how eleventh grade TAKS scores are related to other criteria for college readiness. For example, the Texas Education Agency uses a combined verbal and mathematics "criterion score" of 1110 on the SAT and a composite score of 24 on the ACT as additional indicators of college readiness.[22] Using these scores as benchmarks would encourage setting college-readiness standards above 2300 in English Language Arts and just below 2300 in mathematics.

In addition, the Coordinating Board uses a score of 230 on the reading THEA exam to indicate that the student is college ready and can be excused from remedial courses, while a score of 270 in mathematics shows that a student is ready for college algebra.[23] Based on these standards and the information in Table 1, a student with an eleventh grade TAKS English score of 2200 was projected to have a 77% chance of being college ready in reading and writing; that probability increased to 90% for a student with an eleventh grade score of 2300. Eleventh grade TAKS mathematics scores of 2200 and 2300 indicated about a one-quarter and three-quarters probability, respectively, that a student would be ready for college algebra.[24]

[20] The proficiency benchmark in reading or mathematics consisted of a TLI of 85 or above. A 2001 survey of a random sample of 184 Texas elementary schools found that about a third of those schools were using the JFTK School Reports, which were focused on this benchmark.

[21] The THEA exam was formerly known as the Texas Academic Skills Program, or TASP. Among its other responsibilities, the Coordinating Board is the entity that collects and analyzes data from Texas public colleges and universities.

[22] These criterion scores were originally set by the Texas State Board of Education in the 1990s.

[23] In addition, some teacher preparation programs use a reading score of 250 as a minimum requirement. THEA scores range from 100 to 300.

[24] TAKS scale scores in grade 11 in 2003 ran from around 1400 to 2800, with a mean of 2149 in English language arts and 2102 in mathematics. The passing standard of 2100 in both subjects took effect in 2005.

Table 1
Relationship of 11th Grade TAKS Scores to College Readiness Measures

	11th grade TAKS score	predicted ACT score	predicted SAT score	approximate probability of THEA score > 230	approximate probability of THEA score > 270
English*	2100	17.7	461	57%	n/a
	2200	20.1	502	77%	n/a
	2300	22.5	543	90%	n/a
	2400	24.9	584	100%	n/a
Mathematics	2100	19.5	472	67%	5%
	2200	21.9	521	90%	26%
	2300	24.3	570	100%	77%
	2400	26.7	618	100%	100%

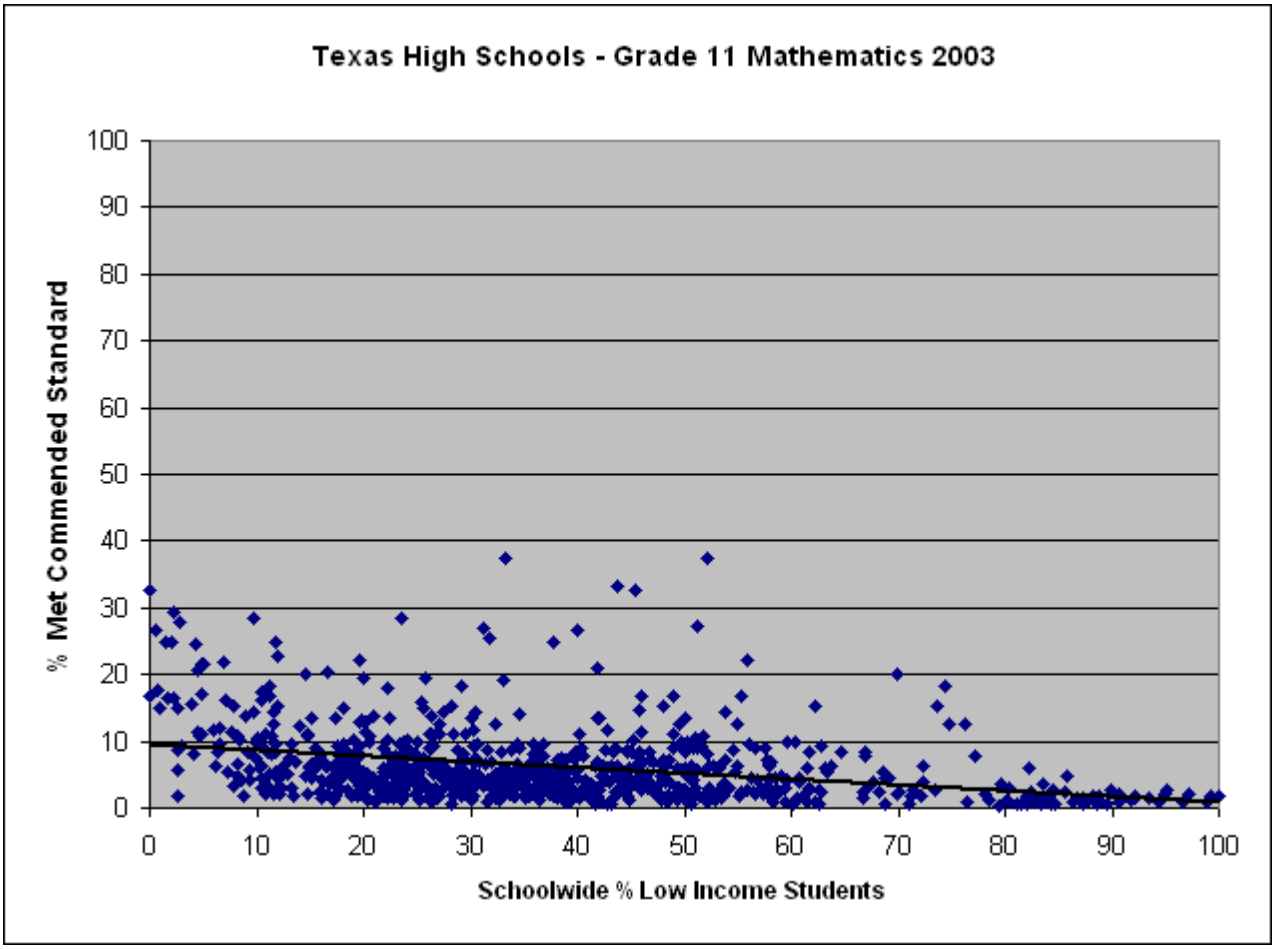
*** The 11th Grade TAKS English Language Arts test covers both reading and writing.**

Source: Texas Higher Education Coordinating Board, 2003; Texas Education Agency, 2003.

It should be apparent that a range of college-readiness standards are possible based on the information in Table 1. For example, if a 57% probability that the student will be college-ready in reading and writing is good enough, a TAKS English Language Arts score of 2100 would be an acceptable college-readiness standard. On the other hand, one might argue that since higher is better, a TAKS score of 2400 should be the standard in both subjects.

With this information in hand, the state picked 2200 as the college-readiness standard for English Language Arts and mathematics. NCEA preferred a benchmark of 2300 in each subject, in order to achieve a 90% probability that the student would not need remediation in reading and writing and a 77% probability that a student would be ready for college algebra. The NCEA benchmark also comes closer to predicting that students will achieve the state's criterion scores on the SAT and ACT. On the other hand, NCEA judged that a benchmark of 2400 was too high because of "floor effects" – not enough schools were getting significant percentages of their students to that standard to make the standard useful for distinguishing the performance of students in different schools (Figure 1).

Figure 1
Floor Effects in Grade 11 Mathematics
Using the Commended Standard (2400)



Two other considerations encouraged NCEA to adopt a college readiness benchmark higher than the state standard. The first was the explicit recognition that the state's readiness standard was set at a "moderately challenging" level, and that the math and English department chairs had recommended a higher standard.[25] The second is that the relationship between TAKS and THEA, SAT, and ACT scores shown in Table 1 is likely to erode over time – that is, the same TAKS score in grade 11 in later years will predict a *lower* SAT or ACT score and a *lower* probability that the student will be ready for college.

This erosion in the relationship of TAKS to other indicators can result from three causes. The first is self-selection bias: the 11% of eleventh grade students (and 4% of low-income eleventh grade students) who achieved a score of 2300 on the TAKS mathematics test in 2003 were a relatively elite group who may have benefitted from the effect of other variables (motivation, home support, broad general knowledge, etc.) that may have raised their THEA, SAT, and ACT scores. Thus, as the pool of students reaching TAKS scores of 2200 and 2300 becomes less selective, the

[25] The math department chairs favored a standard of 2300 and the English department chairs a standard of 2250 on the eleventh grade mathematics and English Language Arts exams, respectively.

relationships shown in Table 1 will tend to erode – for example, the percentage of students with an English TAKS score of 2200 who are college ready may drop below 77%.

A second effect likely to cause erosion in the relationship between TAKS and other indicators is increased student effort on the grade 11 TAKS exam after 2003, as the test first counted for graduation in 2004. A third effect is test score inflation – TAKS scores might improve faster than scores on other exams *covering the same skills*, due to students' becoming accustomed to specific item formats and wording used in the TAKS tests. Test score inflation can be monitored and prevented by creating sufficient changes in test items at the state level and by the use of alternative assessment formats at the local level.

All of these considerations argue for setting the standard higher, but not so high that floor effects eliminate the contrast among schools. In general, the NCEA benchmark should be reevaluated when the information shown in Table 1 becomes available for 2004 and subsequent years.

Identifying Comparable Standards in Grades 3-10

The Texas State Board of Education set a passing standard of 2100 and a Commended standard of 2400 for the TAKS test in each grade and subject.[26] However, the difficulty level of these standards was not aligned across grades. By contrast, standards for the old TAAS test were based on a scale, the Texas Learning Index (TLI), that made those standards of roughly comparable difficulty across grades.[27] Using a methodology similar to that used to calculate the TLI, NCEA was able to identify scores on the grades 3-10 TAKS test in reading and mathematics that would roughly correspond to various exit-level standards for TAKS. These results are shown in Table 2.[28]

[26] The passing standard was phased in, so that the standard was lower in 2003 and 2004 and was raised to 2100 in 2005.

[27] In the absence of a true vertical scale, scores of "comparable difficulty" were defined as those that were the same number of standard deviations above or below the average score in the base year of 1994, Texas Education Agency 2002. So a score in grade 3 reading that was one standard deviation above the mean in 1994 was assigned the same score on the TLI scale as a score one standard deviation above the mean in grade 10 reading in 1994. There is no easy way to distinguish whether a set of items in a grade are "harder" because of systematically worse teaching in that grade or because the items are more difficult for students of equally skilled teachers.

[28] For both TAAS and TAKS, scores in the same grade are equated across years so that a grade 3 reading TLI of 70 in 1994 would be of comparable difficulty to the same grade 3 reading TLI in 1995, and a TAKS third grade reading scale score of 2100 would mean the same thing in 2003 and 2005.

Table 2

Grades 3-10 TAKS Scale Scores Corresponding to Grade 11 Scores

		Grade 11 Scale Score				
	Grade	2100	2200	2250	2300	2400
Reading	3	2146	2268	2330	2391	2514
	4	2079	2214	2282	2350	2485
	5	2025	2188	2269	2350	2513
	6	2069	2237	2320	2404	2572
	7	2042	2189	2263	2337	2484
	8	2085	2227	2298	2369	2510
	9	2057	2171	2228	2285	2399
	10	2076	2166	2211	2256	2345
Mathematics	3	2163	2260	2308	2357	2454
	4	2142	2241	2291	2341	2440
	5	2121	2246	2308	2370	2494
	6	2090	2214	2276	2338	2463
	7	2067	2151	2193	2235	2318
	8	2052	2162	2216	2271	2381
	9	2012	2138	2201	2264	2390
	10	2041	2135	2181	2228	2321

From this scale is it apparent that a TAKS college-ready score of 2300 in eleventh grade reading is roughly comparable to a third grade reading score of 2391, close to the state Commended level. Had a TLI-type methodology been applied to the TAKS, the 2005 passing standard would have been set at a scale score of 2146 in third grade reading and 2163 in third grade mathematics, compared with the actual passing standard of 2100.[29]

[29] Given grade 3 standard deviations of about 160 in reading and 180 in mathematics, this would have entailed setting the third grade passing standard about one-third of a standard deviation higher in each subject to align with the grade 11

Conclusion

The increasingly close relationship between college readiness and readiness for citizenship and work indicates the value of the goal of "College Readiness for All." Taking this goal seriously shows that a school system is determined to close achievement gaps and provide all students with a strong education. This goal is consistent with a broad diversity of teaching approaches and methods of designing schools and educational delivery systems. *How* students learn algebra or U.S. history is less important than that they acquire a strong knowledge of those subjects.

Setting high but attainable college readiness standards on state tests requires that the tests themselves cover sufficiently challenging subject matter. In addition, collecting evidence on the relationship between state test scores and college readiness requires linking those scores longitudinally to students' SAT and ACT scores and their record of success in college. Currently, ten states have longitudinal data systems that can match students' high school test information with their college records.[30]

The large number of poorly-prepared students entering high school makes it difficult for states to raise their official standards high enough to ensure that a high school diploma is a guarantee of readiness for college or other postsecondary training. States are reluctant to set standards at levels that, over the short run, will identify high percentages of students or schools as failing. However, school systems taking the longer view need not wait for states to act, but can establish goals based on high locally adopted standards. It is particularly critical to establish high local standards for elementary and middle school students and follow through with interventions to support students' ability to reach those standards, thus making feasible the goal of universal college readiness for high school students from all socioeconomic backgrounds.

The next step, for students not clearly on track to college readiness based on their current achievement levels, is to identify standards for academic growth that will put those students on the college readiness track. Using the metaphor of a college-readiness ramp fed by "on-ramps" that lead up to it from below, the steepness of the required on-ramps must be defined and the academic growth of students below the college-readiness track measured against those standards.

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standard. In grades 4-10 reading and 6-10 mathematics, the scale scores that align with the eleventh grade passing standard of 2100 are below 2100 (e.g., 2025 in fifth grade reading). This means that the passing standards in those grades were set above the minimum level needed to align with the eleventh grade passing standard, so that a passing student in those grades should be on track to passing the eleventh grade exam.

[30] Those states are Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Oregon, Tennessee, Texas, and Vermont. Of those, Arkansas, Florida, and Texas can also match data from their state high school tests to SAT and/or ACT data. See www.dataqualitycampaign.org.

Appendix

Establishing a TLI Scale for the TAKS Test

One approach for Texas educators who are familiar with the old TAAS Texas Learning Index (TLI) scale[31] is to create a similar scale for the TAKS and show where the TAKS scale scores in each grade fall on this scale. This is another way of showing that had a TLI approach been used to set the passing standard, the standard would have been set higher in nearly every grade prior to grade 11 (Table A1).

Table A1

TAKS TLI Scores Associated with TAKS Scale Scores

		Scale Score				
	grade	2100	2200	2250	2300	2400
Reading	3	66	75	80	85	94
	4	72	80	85	89	98
	5	75	82	86	90	97
	6	72	79	83	86	93
	7	75	82	86	90	98
	8	71	79	83	88	96
	9	74	85	90	95	105
	10	73	86	92	99	112
	11	70	82	87	93	105
Mathematics	3	65	73	77	82	90
	4	67	75	79	83	91
	5	69	75	78	82	88
	6	71	77	81	84	90
	7	73	83	88	93	102
	8	74	81	85	88	96
	9	76	82	85	89	95
	10	75	84	88	93	101
	11	70	78	82	86	95

TLI scores are rounded off to the nearest whole number. These TLIs are *not* aligned with TAAS TLIs, but rather to the eleventh grade TAKS passing standard which is set to a TAKS TLI of 70.

[31] The TLI scale was in use from 1994 to 2002.

The numbers in this table may be interpreted as follows. The passing standard of 2100 that was phased in by 2005 is set to a TLI of 70 in grade 11. Data from the base year of 2004 were used to map the same scale to other grades, using the number of standard deviations each score represented above or below the mean in 2004.[32] For example, in 2004 a student scoring 2100 in third grade mathematics was about one-third of a standard deviation lower, relative to the third grade average, than a student scoring 2100 in eleventh grade mathematics relative to the eleventh grade average. Since one standard deviation equals 15 points on the TLI scale, the third-grade student was assigned a TLI about five points lower (1/3 standard deviation = 5/15) than the eleventh grade passing TLI of 70. TLI scores of 70 or above in the 2100 column indicate that the passing standard in those grades equals or exceeds in difficulty the grade 11 passing standard, so a student passing in those grades should be on track to passing the eleventh grade exam. Looking at college readiness, on the other hand, a student should score roughly at the Commended level of 2400 in third grade reading (TLI of 94) to be on track to the college readiness level of 2300 in eleventh grade English Language Arts (TLI of 93).[33]

The value of mapping the data to a common scale such as the TLI is that such a scale is useful for the analysis of academic growth. If maintaining the same TLI score is interpreted as achieving "about a year's growth," then it is apparent from Table A1 that a student must average more than a year's growth per year in mathematics to move from the passing standard of 2100 in third grade mathematics (a TLI of 65) to the passing standard of 2100 in sixth grade mathematics (a TLI of 71).

[32] Student scores in the base year of 1994 were used to establish the TAAS TLI scale. A spreadsheet is available from the author showing these TLI calculations for TAKS. 2004 was chosen as the base year for TAKS (even though Table 1 is based on 2003 TAKS data) because TAKS score rose more rapidly in grade 11 than in other grades in 2004, indicating that lack of student effort on an exam that didn't count in 2003 distorted the relationship between grade 11 and other grades in 2003.

[33] Writing is not tested in third grade but is tested on the eleventh grade English Language Arts exam, so a student's performance in fourth grade writing should also be taken into account in determining whether students are on track. The NCEA college readiness benchmark requires that a student score at least a 3 on the essay in grade 11 English Language Arts, for example, so a 3 or above on the fourth grade writing essay might be a good benchmark. An alternative approach would map backward from just the reading items on the grade 11 TAKS for reading and from the grade 11 writing items for writing. In general, given the gaps in the state testing system, school systems need to develop local assessments to determine whether students are making adequate progress in each grade.

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